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IN
DERMATOLOGY

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MODERN PRACTICE
IN
DERMATOLOGY
1950

Edited by

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PHYSICIAN IN-CHARGE SKIN DEPARTMENT ST MARY S HOSPITAL AND MEDICAL SCHOOL LONDON PHYSICIAN ST JOHN S HOSPITAL FOR DISEASES OF THE SKIN AND INSTITUTE OF DERMATOLOGY UNIVERSITY OF LONDON MEMBER ADVISORY PANEL ON DERMATITIS MINISTRY OF LABOUR AND NATIONAL SERVICE

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BUTTERWORTHS MEDICAL PUBLICATIONS

MODERN PRACTICE SERIES

Under the General Editorship of

THE RT HON LORD HORDER GCVO MD FRCP

The following titles have been chosen for the above mentioned series

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DISEASES OF THE EAR NOSE AND THROAT—Edited by W G SCOTT BROWN CVO MD FRCS (*In preparation*)

(*Further titles are in course of preparation*)

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FOREWORD

THE GENERAL practitioner of today has a novel choice offered to him Either he can take the line of least resistance and be merely a clerk signing certificates and forms and unloading his patient upon this or that institution or upon this or that specialist or he can still apply himself to the science and art of Medicine diagnose and treat his patient and preserve for himself the satisfactory thrill of a great adventure

This book assumes that a considerable proportion of practitioners waver though many of them may will make the second choice It is for them that this book is written It has been planned to help in the diagnosis and treatment of disorders of the skin commonly met with during the ordinary course of general practice

The skin is a very sympathetic and a very versatile organ There are probably no other organs of the body to the disorders of which it may not react and react in a variety of ways Careful study of the skin is therefore important not only for its own sake but because it may give a possible clue to the real nature of an obscure disease process The importance of this principle in general practice can scarcely be exaggerated

Then again a senior student often decides that it is good to make one branch of medicine his hobby—a matter of special interest as it were If later he engages in group practice this decision will be found to have been a wise one since it enables him to be of extra help to his partners Extra time given to the study of skin disease during the later pre qualification and the post graduate period is one of the ways in which this desideratum may be achieved This book should be of great help in such a case

A third group of medical men to whom the present work will be found very valuable is the consultant specialist group whether the reader be primarily physician surgeon gynaecologist paediatrician or psychiatrist The overlap of skin disorders with the diseases coming the way of these medical men is considerable and again be it observed that it is in the difficult case that careful observation of the skin so frequently yields valuable information

Because of its wide approach to the subject Dr Mitchell Heggs s book will be welcomed by the dermatologist proper as giving mod rn expression to the now accepted principle that this is the only way in which a skin case can be properly assessed

A dermatologist must first and foremost be a physician able to consider his patient as a whole and to consider the possible influences of disease on his skin He must be able to assess the effects of excesses or deficiencies in diet and to recognize those disorders which are influenced by or directly due to insect parasites bacteria yeasts or fungi He must in addition have a considerable knowledge of the hazards to which the skin is subject in industry He may have to investigate the exact nature of his patient s work the materials and processes with which he is in contact and the conditions in the mine or factory in which he works or under which he lives

PREFACE

It would be impossible to mention all the sources of our knowledge of dermatology but among past and present, acknowledgement is made now to the observations and teaching of Dr G C Andrews, Dr H W Barber, Dr W N Goldsmith, Sir Archibald Gray, Sir Ernest Graham Little, Dr H MacCormac, Drs R W and R M B MacKenna, Dr J M H MacLeod, Sir Malcolm Morris, Professor Pautrier, Dr A C Roxburgh, *Dr J J Pringle, Dr H Radcliffe Crocker, Dr J H* Sequeira, Dr R L Sutton, Dr Marion B Sulzberger, Dr Prosser White, Dr K Wiener and Dr Fred Wise.

Thanks are also due to my assistants Drs Mary Eiloart, R P K Coe, Michael Feiwel, P Forbes Borrie, Stewart Rogers and R J Cairns for help and criticism.

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G B MITCHELL-HEGGS

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To the Editors of the *British Medical Journal* (Fig 112) the *British Journal of Dermatology and Syphilis* (Plate III (*c*) and (*d*) and Fig 114) and to Dr T F Anderson of Aberdeen (Plate II) Dr W Gillies Annan of Durham (Fig 91) Mr D Arthur (Fig 170) Mr Ashman Photographer and Dr Munro Ashman Department for Diseases of the Skin Royal Berkshire Hospital Reading (Figs 14 26 66 119 128 149 180 273 275 281 282 311 314 and 315) the Department of Photography St Bartholomew s Hospital Medical School (Figs 101–103 106–108) Mr F Battersby Photographic Department Royal Infirmary Sheffield (Figs 93–100) Dr Allan Bigham Royal Infirmary Bradford (Fig 71) Dr R Mason Bolam of Newcastle on Tyne (Figs 109–111 134–148) Mr F A Brandt the South African Institute for Medical Research (Figs 226 232) Dr W Herbert Brown of Glasgow (Figs 75 114 174 and 175) Mr A E Clark Technician to the Department of Pathology St Thomas s Hospital Medical School (Figs 219–224 and 306–309) Dr Norman Clark (Fig 297) Dr A R Davidson Pretoria Leper Institute (Figs 245–248) the late Dr Dostrovsky Hadassah Hospital Jerusalem (Figs 236 and 237) Mr Joseph Edwards Staff Photographer of the Vancouver General Hospital (Figs 260–272) Dr Howard Fox of New York (Figs 243 and 249) Dr J H S Gear the South African Institute for Medical Research (Fig 226) The Department for Diseases of the Skin St George s Hospital (Figs 181–187) Dr Jonathan Gluckman of Johannesburg (Figs 250 and 258) Dr C J Hackett Wellcome Museum of Medical Science (Figs 238 239 241 and 242) Dr Bede J Harrison Chief of the X ray Department the Vancouver General Hospital (Figs 260–272) Dr F Helm of Libanon Transvaal (Figs 234 and 235) Mr Jack Hodgkinson Photographic Department Manchester and Salford Hospital for Skin Diseases (Figs 318 and 319) Dr J T Ingram Department of Dermatology General Infirmary Leeds (Fig 74) St John s Hospital for Diseases of the Skin and the Institute of Dermatology Dean Dr J E M Wigley (Figs 10 11 22 (*a*) and (*b*) 24 27–29 82 85 86 154–161 200 274 276–279 283 Plate I and Plate VII) Messrs H K Lewis & Co Ltd (Figs 150–153 and Plate IV) Department for Diseases of the Skin St Mary s Hospital (Figs 15 16 18 32 33 64 65 92 113 117 121 127 129 130 132 133 176–179 188 202 280 317) Photographic Department Middlesex Hospital (Figs 1–4) Dr Neil Murray of Pretoria (Figs 228 229 240 and 244) Dr Newham London School of Tropical Medicine (Fig 233) Dr W J O Donovan Department for Diseases of the Skin the London Hospital (Figs 67–70 76 80 83 104 105 189–194 199 201 205–208 215 217 310 312 and 313) Professor G H Percival of Edinburgh (Figs 171 and 172) the Radcliffe Infirmary Oxford (Figs 284 287–289) Dr E Ritter of Lincoln (Fig 72) Dr A C Roxburgh (Figs 285 and 286) the Royal Cancer Hospital (Figs 34–63) Dr F Sagher of Hadassah Hospital Jerusalem (Figs 236 and 237) Dr F A E Silcock (Fig 112 and Plate III (*a*) and (*b*)) Dr F W Simson of the South African Institute for Medical Research (Fig 232) Mr Strachan Photographer Aberdeen (Figs 290–296 298–305) Dr Marion B Sulzberger of New York (Fig 259) Dr Hugh Wallace (Plate III (*c*) and (*d*)) the Department of Medical Photography Westminster Hospital (Figs 195–198)

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CHAPTER 1

THE STRUCTURE ANATOMY PHYSIOLOGY PATHOLOGY AND FUNCTION OF THE SKIN

H T H WILSON

THE SKIN or integument comprises the epidermis the dermis and the hypoderm or subcutaneous tissue It functions not merely as a protective outer covering for the body but as a complicated glandular structure influencing and being influenced by the internal metabolism and personality of its owner

SURFACE MARKINGS

A symmetrical arrangement of ridges and furrows traverses the cutaneous surface The broader creases are seen in the neighbourhood of the joints and are due to the attachments of the skin to subcutaneous structures The fine pattern which is best seen on the palmar aspects of the fingers and on the plantar aspects of the toes depends upon the arrangement of the fibrous bundles and elastic fibres in the corium The individual characteristics of this pattern cannot therefore be altered or removed without destroying the whole thickness of the skin

HISTOLOGICAL STRUCTURE

The epidermis (Plate I)

On microscopical examination of a stained section of normal skin the epidermis is seen to consist of five distinct layers which are named from without inwards (1) the stratum corneum (2) the stratum lucidum (3) the stratum granulosum (4) the stratum malpighii and (5) the stratum germinativum

Each layer represents a stage in the life of the epidermal cell Produced in the stratum germinativum each cell undergoes a gradual process of transition from a nucleated well differentiated columnar cell to a dry degenerated scale which is shed from the outermost layer of the stratum corneum

The stratum corneum or horny layer

This layer varies in thickness according to the pressure to which it is subjected It is therefore thin on the face and in the axillae and groins and thickest on the palms and soles being greatly hypertrophied on the sole of the barefooted Negro The cells of the horny layer are non nucleated they contain a fatty material of the consistency of beeswax and at their periphery is a highly resistant substance known as keratin The cells of the deeper layers are polygonal in shape but near the surface they become flattened and dried The dead cells of the outer layer are being constantly shed by friction upon the body surface

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The stratum lucidum

The stratum lucidum is intermediate in position and structure between the stratum corneum and the underlying granular layer It is best seen in sections from the palms and soles where it is identifiable as a thin semi transparent line Its cells are flattened with degenerated nuclei, and contain an oily looking substance known as eleidin

The stratum granulosum

The third layer is composed of three or four rows of flattened fusiform cells having basophilic nuclei and a granular cytoplasm The granules are formed of a substance known as keratohyalin which is regarded as a precursor of keratin

The stratum malpighii or prickle cell layer

This is a layer consisting of from 4 to 8 rows of polygonal cells with round or oval nuclei The intracellular spongioplasm of each cell is united to that of its neighbour by a fine protoplasmic fibril or ' prickle so that the whole stratum may be considered as a single entity rather than as a group of individual cells

The stratum germinativum or basal layer

The basal layer is the deepest layer of the epidermis It consists of a row of columnar cells with oval nuclei each cell joined to its neighbours by protoplasmic fibrils In a cross section of skin the basal layer is seen as a wavy line dipping between the papillae to form the interpapillary processes No basement membrane separates the stratum germinativum from the underlying corium as was at one time believed

Langerhans s cells

Langerhans demonstrated that dendritic cell like bodies may be seen in the upper layers of the stratum malpighii after a fresh section of skin has been treated with gold chloride These cells are thought by some to be melanoblasts but are now generally considered to be tactile nerve organs

The corium

The corium or cutis vera is composed of bundles of connective tissue between which lie the blood vessels and lymphatics the sweat and sebaceous glands the nerve endings and the hair follicles The corium has been arbitrarily divided into the pars papillaris and the pars reticularis

The pars papillaris

This derives its name from the minute conical papillae which fit into the corresponding pits of the overlying cuticle Within these papillae lie the capillary loops the smallest lymphatics and nerve endings including the touch corpuscles

The pars reticularis

This layer is continuous with the pars papillaris and lies immediately beneath it with no line of demarcation separating the two The reticular layer consists largely of bundles of white fibrous tissue among which lies a variable number of yellow elastic fibres



Normal epidermis

PLATE I

The vessels and nerves traverse this layer and the glandular structures and hair follicles are situated within it The fibrous tissue is composed of an albuminoid substance known as collagen For its elasticity the skin depends more upon the pattern in which the collagen bundles are interwoven than upon the quality of the elastic tissue which is incapable of resisting much tension

The subcutaneous tissue

This tissue continuous with the corium is composed of bundles of connective tissue between which lie fat cells The glandular part of some of the sweat glands and the deeper hair follicles lie in this layer It is so constructed as to serve both as a support for the blood vessels lymphatics and nerves and as a protective pad for the underlying structures

Vessels

The arrangement of the blood vessels supplying the skin is inconstant some modification resulting from the varying requirements of different regions of the body Usually the arteries lie in (a) a superficial plexus in the subpapillary layer and (b) a d ep plexus lying at the junction of the corium and the subcutaneous tissue From the superficial plexus minute branches pass upward in capillary loops which supply the individual papillae the upper part of the hair follicles and the sweat ducts From the deep plexus branches supply the hair follicles the sebaceous glands and sweat glands and the fat lobules No branches pass to the *corium* which depends for its nourishment on the veins and possibly on the lymph channels

From the capillaries blood drains into the small veins which are arranged in a similar pattern to the arteries and lie alongside them

Glomus

On the palmar and plantar aspects of the fingers and toes there are well developed anastomoses between the arterioles and the venules They are known as glomus bodies structures which apparently assist in the control of skin temperature by regulating the blood flow through the capillaries The glomus is occasionally the seat of a small and very painful tumour

Lymphatics

Lymph flows between the cells or fibres of the skin in spaces which have no endo thelial lining From these channels it drains into the small veins and the true lymph atics The latter are relatively sparse in the skin they lie in a subpapillary plexus and pass through the corium in company with the blood vessels to join a deeper plexus in the subcutaneous tissues

Nerves

The nerves of the skin contain medullated and non medullated fibres The nerves travel upward from the subcutaneous tissue in company with the bloo l vessels and lymphatics At intervals nerve bundles leave the parent trunk in a pattern which Weddell (1945) has compared to the reticulate venation seen in certain leaves Non medullated fibres can be traced into the prickle-cell layer while others supply the hair sheaths and the sweat glands No nervous supply to the sebaceous glands

has been demonstrated up to the present Medullated fibres terminate in specific end organs, the Vater Pacini corpuscles in the subcutaneous tissue the Wagner Meissner corpuscles of the dermis, and the Merkel Ranvier cells of the basal layer The specific functions of these organs will be discussed later

Muscles

Both striated and non striated muscles are found in the skin Striated muscle is confined to the voluntary muscles of the face and neck Non striated muscle is widely distributed, being particularly abundant in the region of the scrotum and perineum where it forms a dense network and round the nipples where it provides a muscular ring Each hair has a non striated muscle the arrector pili attached to its outer coat and the condition of *cutis anserina* or goose flesh is dependent upon the contraction of this muscle

Pigmentation

Skin colour depends upon the following factors (1) the thickness of the epidermis (2) The degree of oxidization of the blood the rate of blood flow and the state of dilatation of the cutaneous vascular network (3) The amount of epidermal pigment The last factor is the most important The pigment is melanin which is present in the form of granules in the cells of the Malpighian and basal layers particularly the latter Bloch has demonstrated that when fresh tissues are immersed in a solution of laevo rotatory 3 4 dioxyphenylalanine (or dopa) certain dendritic cells in the basal layer become darkened This experiment is known as the dopa reaction of Bloch it enables the true pigment forming cells or melanoblasts to be distinguished from the melanophores The latter are able to receive melanin from the melanoblasts but are unable to synthesize it and consequently give a negative dopa reaction

The appendages of the skin

Hairs

These are present on all parts of the body except the palms and soles the red portion of the lips the glans penis and the inner surfaces of the prepuce and *labia majora* Four types of hair can be recognized (1) The long hair of the scalp The total number of these hairs has been estimated as between 100 000 and 150 000 (2) The axillary and pubic hair (3) The coarse hair of the beard trunk and limbs (4) The soft lanugo hair The lanugo hair appears before birth and is not apparently influenced by hormonal secretions Oestrogenic factors control the growth of scalp hair and androgens that of the beard and body hair Both androgens and oestrogens are probably necessary for the growth of pubic and axillary hair The individual hair consists of a shaft which expands at its lower extremity to form a root

The shaft —The shaft of the hair varies greatly in length being longest on the scalp and shortest on the eyelids On transverse section the hair shaft is found to consist of a central medulla surrounded by a cortex which is in turn covered by the cuticle—a single layer of flat scales

The root —This lies in the dermis or subcutaneous tissue the longest hairs being the most deeply rooted Bulbous in shape the root is enclosed by the hair follicle

a simple invagination of the epidermis surrounded by a connective tissue sheath which is derived from the corium Sebaceous glands open into the follicle (Fig 1) at the junction of its upper and middle thirds their secretions serving to lubricate the hair

Hair colour —The colour of the hair depends upon the cells of the cortex In the dark haired they contain pigment which is replaced by air in the white haired person

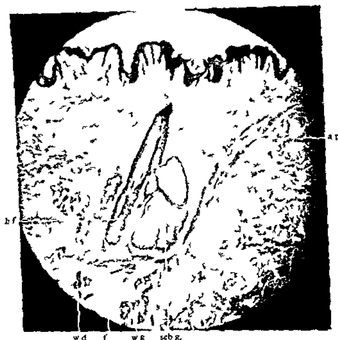


FIG 1 – Hair follicle and cutaneous glands h f = hair follicle sw d = sweat duct f c = fat cells sw g sweat glands seb g = sebaceous gland a p = arrector pili muscle

The nails

The nails are flattened convex translucent horny plates lying in the nail beds The nail may be divided into a distal *free edge* a *central* body and a proximal root The structure from which the nail plate *grows* is called the matrix Macroscopically this is visible as the opaque crescent known as the lunula microscopically it is composed of modified prickle cells which are continued distally in the nail bed The papillae which are present elsewhere in the dermis are represented in the nail bed by a series of longitudinal ridges The nail plate is built up of flattened keratinized cells which are united in the distal portion to form a single homogeneous plate The thin skin over the base of the nail plate is known as the eponychium

Glands

Three types of glands are found in the skin (a) mall sweat or coil glands (b) apocrine glands and (c) sebaceous glands

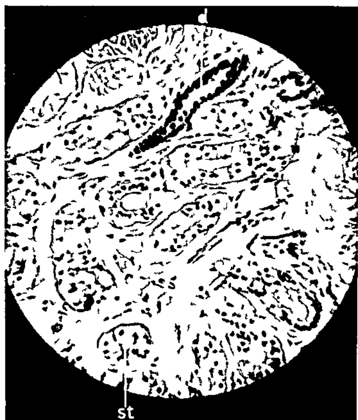


FIG 2.—Sweat gland st = secreting tubule d = duct

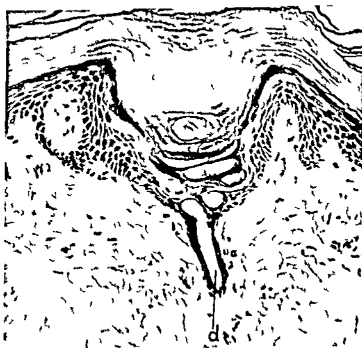


FIG 3.—Normal skin from the sole of the foot showing the sweat duct and its continuation as a spiral channel through the epidermis d = sweat duct

The small sweat glands (Fig 2) —These small glands are distributed over the whole cutaneous surface except the margins of the lips the nail beds the glans penis and the inner surface of the prepuce they are particularly abundant on the palms and soles In structure the gland consists of a blind tubule ending in a spherical coil which lies in the pars reticularis of the corium or in the subcutaneous tissue The gland is formed of a single layer of cubical cells having oval nuclei while the duct wall is composed of two or three rows of cubical cells On reaching the epidermis the excretory duct loses its cellular walls and persists as a spiral cleft (Fig 3) passing between the epidermal cells to open on the skin surface



Fig 4 —Sebaceous gland

Apocrine glands —These glands are situated in the axillae and the region of the genital organs and the breasts They are large glands which open into hair follicles and differ from the sweat glands not only in size but in function Whereas the latter are merocrine or true secreting glands the apocrine glands lose part of their cell substance in the process of secretion They represent an intermediate stage between

the sweat glands and sebaceous glands are odoriferous and probably function as cutaneous sex glands

The sebaceous glands (Fig 4) —The sebaceous glands occur on all parts of the body except the palms soles and terminal phalanges They are related to the hair follicles except on the penis and the lips They are abundant on the scalp and the face especially around the orifices of the nose mouth and ears The gland consists of a variable number of saccules opening into a common duct which enters the hair follicle Microscopically the gland is composed of several layers of polyhedral cells surrounded by a basement layer of flat cells and a connective tissue covering Sebaceous glands are holocrine secreting a degeneration product of the cell substance

PHYSIOLOGY AND FUNCTION

The skin is the largest organ of the body representing about 16 per cent of the total weight of a normal adult so that it is therefore one of the most important organs of the body Through the secretions of the sebaceous glands the surface is kept supple and by the activity of the sweat glands excessive drying is prevented The effects of wear and tear are negatived by the process of desquamation the cells on the surface of the stratum corneum being constantly shed and replaced by the cells beneath It is estimated that between 6 and 14 grammes of dead cells are lost daily from the body surface

The main functions of the skin are protection temperature regulation sensation and chemical exchange

Skin flora

A variety of organisms chiefly micrococci staphylococci and diphtheroids inhabit the skin surface as saprophytes, they are normally harmless to the host and provoke no hostile reaction in the skin Pillsbury and Nichols (1946) found micrococci and a Gram positive spore bearing bacillus to be the most common inhabitants of normal skin while diphtheroids staphylococci sarcinae and streptococci were less frequently isolated The same group of organisms was cultured from abnormal skin but the haemolytic staphylococcus was four times as common and a few *beta* haemolytic streptococci were isolated

Protection

The skin is well designed to protect the underlying structures from minor injuries from the effects of exposure to heat cold and the sun s rays and from the attacks of pathogenic bacteria Superficially the outer horny layer provides an impermeable envelope to protect the underlying cells Deep in the skin the toughness and elasticity of the corium combine with the shock absorbing properties of the adipose tissue to withstand minor injury On exposure to the sun the skin responds by a temporary thickening of the horny and prickle cell layers followed by a deposit of pigment in the prickle cells and particularly in the cells of the basal layer

The intact horny layer acts as a mechanical barrier against the invasion of pathogenic bacteria Lying on the cutaneous surface they are exposed to sun and light and to the action of the cutaneous secretions The antibacterial properties of the

skin have been extensively studied by Marchionini (1928) Colebrook (1930) Burtenshaw (1942) and others Colebrook was able to demonstrate that haemolytic streptococci which were quickly killed on the skin of the hand survived much longer when placed on dry glass It seems probable that the acidity of human sweat is responsible for killing most of the common pathogens by maintaining a skin *p*H of from 3 0 to 5 0 An increase in sweating reduces the acidity and consequently diminishes the disinfectant properties of the sweat The sebaceous secretions mechanically assist in the protection against bacteria by maintaining a supple horny layer and preventing fissuring The experiments of Burtenshaw (1945) have further demonstrated that the streptococcus is susceptible to the higher fatty acids present on the skin surface

Inflammation

Where the first line of defence has been pierced the skin responds to injury by undergoing the changes associated with inflammation Sir Thomas Lewis (1927) was responsible for describing the triple response which is recognized as the constant pattern in which the vessels of the skin respond to a minor injury The three components of the reaction are (1) the local red reaction (2) the flare and (3) the weal

A firm stroke produces the local red reaction a red line developing at the site of pressure This results from the active dilatation of the underlying capillary loops Repeated strokes elicit the flare a wider red band resulting from the dilatation of arterioles in the neighbouring subpapillary plexus This reaction is effected by an axon reflex The weal results from a stronger stimulus and is due to the escape of fluid from the neighbouring capillaries The triple response is set in motion by the release from the injured cells of a substance which Lewis named the H substance It is probable that the H substance is identical with histamine

The migration of leucocytes to the injured area does not depend upon the action of histamine A chemotactic substance which has been isolated by Menkin (1938 1940) and named leucotaxine appears able to promote cell migration and may be the responsible agent

Temperature regulation

Heat is lost from the body by radiation evaporation convection and conduction Radiation accounts for 60–80 per cent of the total loss and is controlled by the rate of blood flow through the cutaneous vessels Evaporation consists of both sensible and insensible loss of water from the skin The insensible loss may be demonstrated in subjects who possess no sweat glands and apparently results from osmosis or diffusion through the skin In normal subjects it is demonstrable when the temperature of the environment is below 88° F perceptible sweating occurring when the temperature rises above this figure Sweat is produced by the eccrine glands in quantities varying from 30 millilitres an hour under basal conditions to 1½ litres hourly when the subject is performing heavy work

Sweating is centrally controlled and is influenced by both skin and blood temperatures Although the skin of the palms and soles represents only a small proportion of the total body surface it is estimated that about 30 per cent of the total body sweat derives from these sites

Sensation

The skin and the nervous tissue are both evolved from the epiblast Their common ancestry is reflected in a similarity of function and the skin is recognized as the most extensive sensory organ of the body Cutaneous sensations include those of touch heat and cold pressure and traction itching and pain

Perception varies at different points on the skin surface, being most acute on the finger tip and least acute on the small of the back Space does not permit of a detailed review of the subject of cutaneous innervation but present knowledge of the subject may be summarized as follows

As a result of the researches of Woollard and his colleagues (1940) Weddell (1941) and others it is known that sensation is represented in the skin in punctate form the different receptors lying at different depths Krause s end bulbs record sensations of cold Meissner s corpuscles Merkel s discs and the hairs are associated with the reception of touch stimuli Pressure is felt by the pacinian corpuscles and sensations of warmth probably by Ruffini s nerve endings Woollard showed that every nerve fibre coming from a sensory ending was accompanied by an accessory fibre morphologically similar to those subserving pain This would explain the phenomenon that every stimulus if sufficiently intense will give rise to a sensation of pain The same nerve endings record itch and pain and both sensations are conveyed centrally in the anterolateral tracts

A variable overlap occurs between areas of skin supplied by neighbouring nerve fibres and individual sensory spots are innervated by more than one fibre Continuity of sensation is thus maintained over the body surface and a superficial incision does not normally produce an area of anaesthesia

Lewis (1936) is responsible for the concept of a nocifensor system He claims to have demonstrated in the skin a system of nerve fibres which are derived from dorsal roots and have an arborizing terminal pattern These have apparently no afferent function but are concerned with the spread of cutaneous hyperalgesia This theory of a nocifensor system independent of the pain system is not accepted by all anatomists

Chemical exchange

Excretion

This occurs by means of the sebum the sweat and the process of cell desquamation Fat is excreted in the sebum the chemical composition of which is not accurately known It is a greasy semi fluid substance containing fats soap cholesterol and inorganic salts with which are mixed bacteria and cellular debris Abundant at birth in the form of vernix caseosa it diminishes during childhood At puberty *the sebaceous glands share in the general glandular activity which* marks the approach of *adolescence and their secretion increases to diminish* again in later life The sebum is modified in the auditory canals to form cerumen and beneath the prepuce it collects as smegma

Excreted sweat is a clear colourless hypotonic (rarely isotonic) fluid It contains chlorides sugar and small quantities of urea uric acid and creatinine The similarity between the composition of sweat and urine is evident and the sweat glands share with the kidneys the function of excreting waste products from the

body In renal failure the excretion of urea in the sweat is greatly increased and the contained sugar may be raised considerably in diabetes mellitus

The exfoliating epidermal cells are agents for the excretion of sulphur and arsenic Sulphur is excreted in the form of the sulphur-containing amino acid cystine in quantities estimated by Peters (1945) to vary from 2 05 per cent of the total des quamated cells in control subjects to 3 11 per cent in a case of exfoliative dermatitis The predilection of arsenic for the keratin tissues is of considerable medico legal importance and the metal may be found in the skin nails and hair many weeks after it has disappeared from the rest of the body

Absorption

Aqueous solutions have little or no power to permeate the intact skin although chemicals incorporated in an oily or fatty basis are able to do so Penetration takes place mainly through the orifices of the hair follicles but the presence of excoria tions or abrasions in the skin greatly increases its permeability Harry (1941) reviews the extensive literature dealing with the penetrative properties of ointment bases a problem which has inspired much research and produced a variety of conflicting opinions

Respiration

In amphibia the skin is an important respiratory organ In man oxygen and carbon dioxide are exchanged between the surface capillaries and the environment penetrating the skin in the process The quantities however represent only a small fraction of the gaseous exchange in the lungs and the respiratory function of the skin is of negligible importance

Antibody production

The capacity of the skin for producing antibodies is of considerable diagnostic and therapeutic importance The Mantoux Dick and Schick tests for tuberculosis scarlet fever and diphtheria respectively are examples of the numerous reactions which depend upon a specific response developing in the skin after intracutaneous injection of the appropriate allergen

Production of vitamin D

Not least important of the skin s functions is the synthesis of vitamin D This vitamin is formed in the skin from ergosterol ultra violet light being necessary to complete the reaction

PATHOLOGY

Owing to its accessibility the skin is well adapted for histological study during life The technique of biopsy consists in the removal under local anaesthesia of a small section of living skin The section should consist of the whole thickness of skin and should include both healthy and diseased tissue It is usual to close the wound with sutures and provided that the incision has followed the normal lines of cleavage an inconspicuous scar should result The following are the main pathological changes which are commonly encountered

In the epidermis

Hyperkeratosis —This is a simple hypertrophy of the horny layer Diffuse hyper keratosis is seen in the congenital condition known as ichthyosis Localized hyperkeratosis is most commonly met with in the form of a callus on the palms or the soles The callus is a simple protective response at the site of local pressure Circumscribed hyperkeratosis may be found in a number of conditions of widely different aetiology Prolonged exposure to sunlight and chronic arsenical poisoning may both give rise to keratoses which are liable to undergo malignant change Much rarer is the condition known as keratodermia climactericum an affection of the menopause which results in hyperkeratosis of the palms and soles

Parakeratosis —This disorder is found in psoriasis eczema, and most of the dermatoses which give rise to scaling Microscopically the normal stratum cor neum is replaced by a layer in which the cells are usually increased in number are swollen and retain their nuclei Serum and leucocytes collect in the intercellular spaces, and the individual cells are loosely attached to one another and easily shed

Dyskeratosis —A term used to describe certain abnormal types of keratinization It is best seen in the rare keratosis follicularis described by Darier In this condition round degenerated cells known as *corps ronds* and grains are seen in the horny and granular layers

Acanthosis —This is a hyperplasia of the prickle cell layer It is seen in warts and in many inflammatory conditions Histologically there is an increase in the number of cells with retention of the cellular structure and of the intercellular fibrils It is very important to differentiate this condition from the metaplasia which occurs in epitheliomas and the pre cancerous conditions In the latter the cellular structure is altered the intercellular fibrils tend to be lost and mitoses are frequent

Spongiosis —The name given to intercellular oedema of the prickle cell layer is spongiosis It is seen in most inflammatory conditions and is often associated with parakeratosis

Epitheliomas —These neoplastic proliferations of the epidermis may be of squa mous cell or basal cell type according to their site of origin in the prickle cell or basal cell layer Mixed forms are sometimes found

In the corium

Inflammatory changes in the corium follow a similar histological pattern to those observed elsewhere in the body

In acute inflammations a polymorphonuclear reaction occurs which is usually greatest around the sebaceous glands and sweat glands where an abundant blood supply exists In chronic inflammatory conditions the cellular reaction is more complex and extravasated cells from the blood vessels are joined by fixed con nective tissue cells from the corium The cellular exudate may therefore contain polymorphonuclear leucocytes eosinophils lymphocytes plasma cells endothelial cells and small round connective tissue cells The multinucleated giant cell is found in a number of chronic affections particularly in the lesions known as the granulomas

While the histological changes associated with chronic inflammation and in particular with the great proliferation of plasma cells are common to all the granulomas the several members of the group are usually distinguishable by a characteristic individual pattern Tuberculosis is recognizable by the tubercle which is composed of a central area of endothelial and giant cells surrounded by a ring of lymphocytes syphilis may be identified by the plasma cell response the proliferation of connective tissue elements and the arteritis and leprosy is recognized by the characteristic vacuolated lepra cell

Infiltrations of the skin may be cellular or non-cellular The former are occasionally seen in the leukaemias and reticuloses whereas the latter include amyloidosis and the various lipoidoses

Atrophy affects both the epidermis and the corium and is characterized by a thinning of the epidermis obliteration of the papillae disappearance of the elastic tissue from the corium and degeneration of the collagen bundles These changes are seen in the scars which accompany the healing of the deeper and more destructive lesions and they are also seen in the senile skin which is the heritage of old age

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Distribution of lesions

It is usually best to b gin the examination by looking at a typical lesion on an exposed part of the body In some cases this may give the diagnosis at once For example the following may b- diagnosed immediately by their appearance numerous warts on a child s hand greasy skin with blackheads red papules and pustules on the face or neck in acne vulgaris pustules with central hair on the chin in sycosis pustules bullae crusts or rings of scales in impetigo an early rodent ulcer with the typical pearly edge on ear temple eyelid or cheek group of vesicles suggesting an herpetic lesion the red tender painful so-called bolster like swelling around and over the nail b-d in chronic paronychia associated with monilial and staphylococcal infections

Again the lesions may indicate that a covered part or the whole of the body should be examined An example of this is a vesicular eruption b-tween the fingers which may be (a) a secondary allergic manifestation of bacterial or mycotic infection elsewhere that is an ide (b) associated with a dysidrosis (c) due to psychogenic disturbance or (d) the result of contact between the skin and an irritant Oval vesicles or vesicles associated with or at the end of grey burrows suggest scabies A papulo-squamous eruption on the palms and soles may be syphilitic whereas on the dorsum of the hand particularly if associated with pitting of the nails it may be psoriasis Irritation will not be a marked feature in these conditions but if there is intense irritation with purple papules on the flexural aspect of the wrists the condition may be lichen planus on which the papules have a shiny top and are crossed with greyish white lines

On the scalp important clues may be diffuse spreading scaling as in seborrhoea capitis or clearly marginated scaling patches or adherent mortar like crusts as in psoriasis If seen on the head of a child circular patches of scaly skin on which the hair is less dense and the individual hairs shorter and more brittle than normal should be considered to be ringworm until proved otherwise

These pointers help the clinician to ask further relevant questions and may save the patient the trouble of completely undressing for further examination

If the diagnosis is still in doubt however the patient should be undressed and examined in a good light or if this is not practicable advised that a complete examination will be necessary and returned home for an examination in b d

General examination

The patient should b examined first in a general way and secondly with par ticular attention to the various areas or groups of areas suggested by the pre liminary examination A lens may be necessary in both the preliminary local examination and the later general examination to enable the dermatologist to be quite certain of the predominant primary and secondary lesions

It is a good plan to note the patient s demeanour gait and gestures and to con sider the possibility of anxiety states apathy and distrust Does the stated age correspond with the patient s appearance?

The clinician should ask himself whether undue pallor or erythema is present and whether the patient looks ill or jaundiced When erythema malaise or symp toms of a chill are of recent onset it is wise to take the temperature and pulse

CHAPTER 2

HISTORY AND EXAMINATION OF A PATIENT, WITH NOTES ON DIAGNOSIS

G B MITCHELL HEGGS

THE ONSET of many skin diseases may be so definite as to suggest a diagnosis at once, but in many cases the history is misleading because the patient may stress points that interest him and may leave out essentials *Again the appearance spread* and symptoms may be influenced by the correct or wrong treatment, by clothing by bathing or by occupation

EXAMINATION OF THE PATIENT

History

In a busy practice the following routine is suggested The patient s name address, age and occupation are recorded and then he is asked of what he complains The answer is likely to be (a) of irritation or itching (b) of spots or (c) of alterations in the skin, scalp or nails

If the patient complains of irritation he should be asked how long he has had it what part of the body was first affected and when it is most marked

If the patient complains of spots it is best to make certain whether they itch or not *whether they appear and disappear in a matter of an hour or two* and whether they have been coloured or have had a blister scale or crust on them

If the patient complains of a change in the skin it is important to know (a) *whether the skin has become rougher or smoother and if it has become more or* less sensitive (b) whether it has become tighter and stiffer or more loose and slack and (c) whether redness scaling blistering or moisture occurs

When the scalp is affected the doctor must find out whether hair has been falling whether the hairs have failed to grow to their usual length or have altered in colour, texture or springiness

If the nails are affected the questions to be asked are whether the nails are discoloured thickened or inclined to splinter or break off which nail was first affected and whether hands and feet are both affected

At this stage it is important to ask the patient (a) whether any members of the family are or have been similarly affected (b) whether anyone living in the same quarters or working in the same place or factory is similarly affected (c) whether the patient has ever had a similar condition before (d) whether there is any seasonal variation (e) whether the patient was having any form of therapy oral intramuscular or intravenous at the time of onset of the eruption and (f) what treatment such as lotions ointments *or rays the patient has had for the skin in the past* or is having at the time of examination

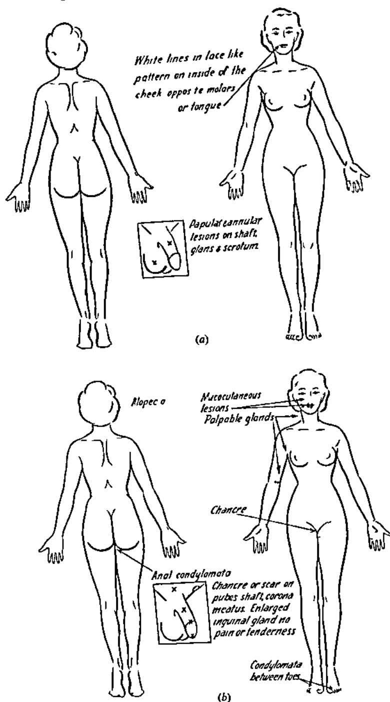


FIG 6.—Showing areas affected by (a) lichen planus and (b) syphilis

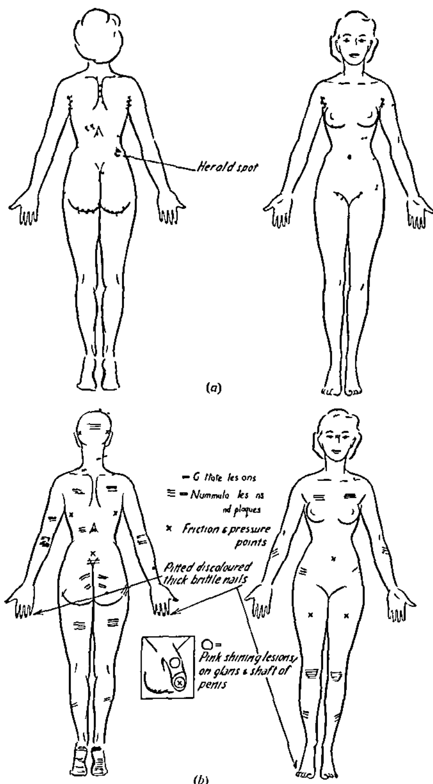


FIG 5 —Showing areas affected by (a) pityriasis rosea papules and macules tend to follow lines of cleavage of skin and lines of ribs and (b) psoriasis note tendency to pick out extensor aspects

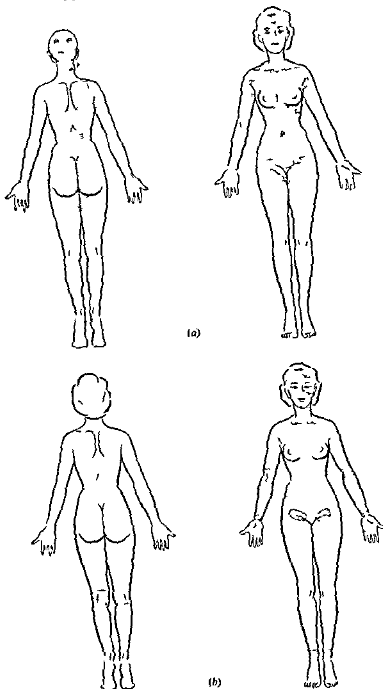


FIG 8.—Showing areas affected by (a) seborrhoeic dermatitis and (b) atopic flexural eczema

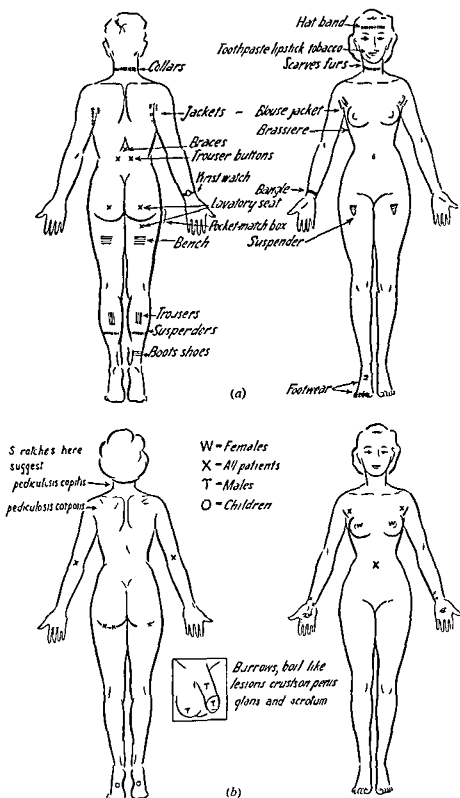


Fig 7 —Showing areas affected by (a) contact dermatitis and (b) scabies possibly accompanied by impetigo of face and pediculosis capitis

accustomed to fluorescent lighting or to powerful electric light practice overcomes many difficulties in assessing differences of colour shape and size which may depend on colour and light reflection

In general after making a preliminary estimate of the distribution of the rash it is wise to examine different parts of the body and ultimately perhaps to examine the whole body in a regular order so that with the passage of time a habit is established which minimizes the chance of missing any part of the body as other wise might happen when many patients have to be examined in a short time

The clinician should start with the fingers nails finger clefts wrists and elbows first one aspect then the other he should then examine the face scalp and chest and turn the patient round to examine the back The buccal cavity must be viewed preferably with a torch and this stage of the examination should include the tongue and inside of the mouth when dentures are worn they should be removed for this investigation

The patient is then instructed to drop any remaining underwear and a complete examination of the back and then the front is made the feet including the areas b tween the toes are then examined

At this stage the main features of the eruption will be apparent but in order to form an accurate estimate it may be necessary to examine the flexures and apposed surfaces of the skin more closely A good plan is to place the patient on a couch and examine in succession the armpits under the breasts and behind the ears the pubis and penis then to turn the patient into the prone or left lateral position and examine the natal cleft and then telling the patient to bend the knees to examine the vulva perineum or scrotum and anus The anal canal vagina cervix or urethra may also need examination with the appropriate apparatus

In practice this routine approach to the less obvious cases gives the greatest view of the patient s skin with the least embarrassment It is sometimes helpful to have a footstool available on which the patient can place his feet for examination and clean sheets or sheets of paper on which the patient can lie as the leper complex is often strongly developed in patients suffering from skin diseases and they are on the one hand very self conscious about leaving scales or marks on linen and on the other apprehensive of contracting skin diseases in a surgery or clinic (Figs 5–9)

Examination of the lesions

When the examination of the patient as a general picture (with the big eye) has been completed it will be possible to decide what parts of the eruption seem to be most characteristic of the whole these are the areas which should be examined very closely It is then important to be quite certain whether there is erythema pallor or pigmentation or whether scaling is present If there are scales are these fine or coarse dry non adherent and like mica or yellow slightly greasy and adherent? One must observe whether the scales are collected round the roots of hairs and whether the removal of the scales leaves any tell tale signs such as a shining membrane small pits or capillary haemorrhages

The clinician must then search for one or all of the primary lesions macules papules nodules and tumours weals vesicles bullae and pustules These may be

When the patient looks more anxious than the examination justifies it is a good plan to ask whether the malaise is unduly severe or if there are any other symptoms such as headache pains in the limbs trunk or abdomen and whether there have been disturbances of digestion micturition defaecation or menstruation

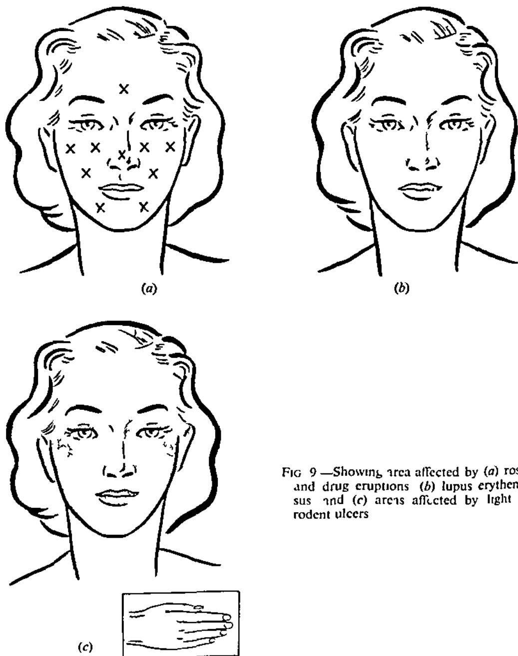


Fig 9.—Showing area affected by (*a*) rosacea and drug eruptions (*b*) lupus erythematosus and (*c*) areas affected by light and rodent ulcers

It is quite a good idea to look at a widespread eruption as one would a painting walking from one side to the other or turning the patient slightly to see the effect of the change of light The ideal illumination is daylight but for those who are

accustomed to fluorescent lighting or to powerful electric light practice overcomes many difficulties in assessing differences of colour shape and size which may depend on colour and light reflection

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The clinician must then search for one or all of the primary lesions macules papules nodules and tumours weals vesicles bullae and pustules These may be

modified by the progress of the pathological process by infection injury, friction or scratching and may be intermingled with secondary lesions such as scales crusts, excoriations fissures ulcers or scars

Is the rash composed of macules, that is to say small spots from 0.1 to 5 centimetres in diameter not raised above the skin surface, or is the surface raised to form papules, nodules plaques or tumours? A papule is a small raised lesion involving part of the dermis It may be pink red yellow brown or, in melanomatous lesions black The size varies from microscopic to 0.4 or 0.5 centimetre in diameter A nodule is a small rounded lump not only within or above the skin but sometimes in the subcutaneous tissue nodules vary from 0.2 to 1 centimetre in diameter A plaque is an area of the skin either above or below the rest of the skin surface which may be formed by confluence or coalescence of a number of papules or nodules Lesions larger than nodules are usually described as tumours The surface of the skin may be raised in a weal which may be circular linear, along the line of a scratch or irregularly shaped The surface is raised above the level of the surrounding skin pink at the periphery and white at the centre Is the skin roughened by the presence of small vesicles which can only just be detected by their tendency to glisten? Vesicles are small blisters filled with clear serous fluid and may be so small as to be barely visible to the naked eye They are essentially lesions in the epidermis and may be unilocular or multilocular domed acuminate or umbilicated A vesicle may be single and discrete or a number may be scattered or arranged in characteristic groups Larger vesicles, more than 1 centimetre in diameter are known as bullae and pustules are opalescent vesicles filled with pus cells and organisms if bullae are present they may also be purulent They may vary from 1 to 10 centimetres in diameter, or may be larger, in pemphigus, for instance the whole ankle may be involved in one enormous blister

It is important to decide whether the surface of the skin has been broken or even destroyed The tops of vesicles and papules and normal skin may be removed by scratching Fissures are definite breaks in the skin surface usually linear, and most likely to be found where there is most skin movement that is to say near the joints and mucocutaneous junctions and particularly where the skin has become extremely thick and inelastic Some of the deepest and most painful fissures occur on the thickened skin of the palms and soles

Scales consist of few or many epidermal cells they may be dry or greasy small and powdery or large and laminated In scarlet fever there is a characteristic scaling at first punctate and later in the form of large sheets or casts which can be peeled off In psoriasis the scales are like mica whereas in pityriasis versicolor they are like bran and in seborrhoeic dermatitis they are large and greasy

Crusts or scabs usually consist of a mixture of serum pus blood epithelial cells and bacteria they may be dry soft and friable or moist grey or greenish masses and are frequently associated with an unpleasant smell

Ulceration may follow any of these lesions, and may involve the dermis as well as the epidermis Ulcers may be small and punctate leaving a scar which is difficult to detect or many centimetres in length and breadth Late syphilitic ulcers are usually punched out with sharp clear cut edges whereas ulcers due to tuberculous infection or basal cell epithelioma frequently undermine apparently healthy

skin Pain and tenderness is a more common feature in tub rculous infection than in the late stages of syphilis It is a good plan to see whether there is exuberant granulation tissue as this may prevent epithelium from closing a break in its surface

Visual examination and the careful history taking can then be assisted by digital examination to decide whether the skin as a whole is warmer or colder than usual whether it is more stiff taut or slack than normal whether oedema is present and if so whether it is pitting oedema Any evidence of a true thickening of small or large areas of skin as a result of infiltration should be noted The adjacent or regional lymphatic glands should be examined for tenderness increase in size or change in consistency The consistency of papules nodules and tumours must be carefully considered are they hard soft cystic or rubbery?

In addition to these direct examinations the use of a transparent glass spatula or microscope slide makes it possible to apply firm pressure to the skin sufficient to express the major part of the blood while still observing the skin beneath As a result of this compression of the vessels changes of colour due to infiltration or pigment can be detected This method of examination is known as diascopy and is extremely valuable in the detection of infiltration in tuberculous or syphilitic infections and of petechiae in an erythematous skin

Vesicles should be examined to see whether they are unilocular or multilocular scaling lesions should be rubbed gently to see whether this increases their whiteness or extent on the one hand or reveals greasiness on the other Elevation of scales in lupus erythematosus may reveal little processes on the under aspect of the scales and minute pits in the skin On the other hand gradual removal of the scales in psoriasis by gentle scraping eventually reveals a shining basement membrane and then if this is damaged by further scraping capillary haemorrhage Such a finding would not be present in eczematous dermatitis or lichen planus

In certain circumstances the superficial layer of the epidermis slides on the deeper layer producing a crinkle in the skin This is known as Nikolsky s sign and is frequently to be found in cases of pemphigus vulgaris

In certain diseases changes of the skin may be associated with disorders of sensation and tests for anaesthesia analgesia and hyperaesthesia should be carried out when peripheral neuritis leprosy and late manifestations of syphilis are being considered

Sometimes those parts of the patient s skin which might provide the diagnosis will be found to be covered with ointment or powder it is then important to remove this with cotton wool moistened with oil or water and of course all bandages should be removed

Scalp examination can be assisted by the use of Wood s light This entails using an enclosed arc such as a mercury vapour lamp or tungsten arc and filtering the beam through a plate of dark violet glass containing oxide of nickel This transmits only the long ultra violet rays of wavelength from about 3 650 to 3 300 Angstrom units together with a very little red and visible violet radiation Normal hair and skin fluoresce only very slightly under this light looking as though they had been dusted with flour the finger nails fluoresce more brightly and hairs infected with the common small spored ringworm fluoresce with a greenish light like luminous

hands and figures on a watch in the dark This test is of little value unless the scalp has been washed and is free of iodine, ointment or brilliantine

It is very important to bear in mind that the age of the eruption in days weeks or months may be of considerable significance in pityriasis rosea for example in the first week there is only the herald patch which could easily be mistaken for ringworm, in the second week there is a widespread maculo papular eruption like a syphilide pale brown or fawn in colour, and this changes in character with the passage of time leading to the classical appearance after some weeks Unfortunately the evolution of an eruption cannot often be seen as it is frequently not practicable to see the patient daily unless he is in a ward His account of the speed of development change in character, and confluence and grouping of the lesions may be very helpful The rate of involution may similarly be important for example urticarial lesions may disappear in a few hours herpes simplex in from 7 to 10 days and psoriatic lesions in a few weeks without any treatment Grouping is always worth recording particularly when in the form of a ring or in S or gyrate shapes

It is the constant examination of these lesions and their groupings that enables one to detect at once the very unusual sometimes bizarre lesions and grouping of lesions encountered in dermatitis artefacta or mycosis fungoides

Reassurance of patient

A carefully taken history and a meticulous examination may not only enable the clinician to satisfy himself about a diagnosis but may also reassure the patient Furthermore, patients and the relatives or friends who may accompany them are most comforted when in addition to telling them that the disease is not contagious the clinician actually touches their skin as they feel that he would not do so if he knew the condition was one that could be easily picked up Whenever possible fears of tuberculous syphilitic or leprous infection or of cancer should be dispelled It is important to remember that the clinician has made his quick differential diagnosis based on adequate knowledge the patient on the other hand has no such guide but thinks of all these diseases without adequate knowledge of their *appearance symptoms or effects frequently* he dare not ask questions for fear of an unsatisfactory answer

DIAGNOSIS

The following brief descriptions may be helpful in diagnosis and guide the reader to the correct chapter in this book

Pityriasis rosea

The patient complains of a rash on the body without any irritation of a few days duration The history usually shows that one patch of skin trouble was present a week or two before the general eruption if in a part visible to the patient and the appearance of this herald patch may have coincided with a mild chill or coryza, or perhaps a change from summer to winter underclothes

A general view indicates an erythema erythemato maculo papular or erythemato squamous eruption which on close examination may prove to be made up of small

oval pink or reddish yellow macules papules or a mixture of small macules and papules Occasionally the lesions may be vesicular and occasionally they are much larger than usual If the rash is of 10 days duration its evolution may result in a pale brown or fawn coloration whereas if it is of longer duration scaling may be obvious even at a distance In the early stages the colour of the rash may become less marked as the patient s skin grows colder a feature which is less obvious in similar syphilitic or psoriatic lesions The distribution is that of a short sleeved vest not confined to the mid sternal face and mid dorsal regions as in seborrhoeic dermatitis (Fig 5a) Gentle scraping shows that the fine scales are adherent except at the centre where a linear crinkling develops There is no vesicular elevation at the edge of the lesions such as one sees in ringworm and scaling commences in the centre leading to a little ring of scales the collarette of Biett Digital examination will show that there is no infiltration but there may be a general enlargement of the lymphatic glands These glands are usually not so hard and shot like as those in early syphilitic infection nor so firm and rubbery as those found in lymphadenoma

This condition like so many others in dermatology may be difficult to diagnose as there may be only a few typical lesions and many non typical ones Again some people have a widespread eruption which does not itch at all whereas others will have only a few lesions and declare they cannot sleep a wink at night because of the irritation For the most part however irritation is slight or absent and mention of it suggests excessive treatment or an associated anxiety factor such as the fear of infectious or contagious disease (*see* Chapter 13)

Psoriasis

The patient may complain of a few pimples a persistent plaque or a scaly area on his skin or the story may be of a widespread eruption The general eruption may be of recent onset and involve the face trunk limbs and scalp or the lesions may be of some weeks duration and involve most of the body

Examination with the big eye shows that the eruption tends to pick out the extensor aspects of the body in particular the knees and elbows the scalp and over the sacrum In actual practice the umbilicus natal cleft and axillae may also be affected (Fig 5b)

A generalized eruption of short duration may be guttate psoriasis In this the lesions are small red papules covered in a few days by a silver or mica like scale Even in the most profuse eruptions the distribution on the whole tends to remain extensor with less frequent lesions on the flexural aspects

Chronic cases of some months duration usually show papulo squamous lesions which have a predilection for the elbow knees scalp umbilicus and penis and also points of injury and friction such as scars of accidents or operations Other vulnerable areas are those rubbed by a truss corset belt suspenders braces brassiere straps waistbands trouser buttons and spectacles and sometimes even areas which are rubbed by keys in a pocket and the line on the scalp where the hair has been parted with a comb Again psoriatic lesions may develop on a slightly twisted big toe joint subjected to uneven pressure and heels which are rubbed by loosely fitting shoes

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In certain cases the flexural aspects of joints are affected more than anywhere else, in particular the axillae natal cleft and around the scrotum and vulva In those who are fat and in females who have pendulous breasts, psoriasis may develop under the breasts, simulating intertrigo or monilial infection and it may occur in either sex behind the ears, around the navel and sometimes between the toes Whereas in syphilis such lesions will almost certainly be moist in psoriasis they may be either wet or dry

The close up view shows a bright red papule with a mica like scale If a disc like or nummular lesion is stroked the appearance suggests a streak of candle grease on the top the so called *tache de bougie* It is always a good plan to look at the nails if psoriasis is suspected, to see whether they are pitted, discoloured or thickened, as mentioned in the chapter on this subject (*see* Chapter 14)

The tentative diagnosis may be clinched by three simple tests

(1) Rubbing the lesion with a glass or metal rod, when the dry scales will tend to become more apparent

(2) Gently scraping off these scales until a uniform dry shiny surface or basement membrane is reached and placing on this a microscope slide or transparent spatula and applying pressure In psoriasis most of the erythema will disappear, without leaving a brown stain, in psoriasiform syphilide, a brown stain is likely to be seen

(3) Scraping the basement membrane away and quickly examining with a lens In psoriasis minute bright red capillary bleeding will be seen

Syphilis ("-ide")

When the patient looks anxious and ill and the rash suggests psoriasis or pityriasis rosea it is perhaps wise to consider syphilis first If the patient himself suspects syphilis he will probably wait until the end of a clinic for the moment of greatest privacy

In my experience it is unusual to see a macular eruption on a man without signs of a genital or extra genital chancre, although it can easily occur in a woman when the primary chancre may be out of sight Syphilis should be suspected when a maculo papular eruption tends to pick out the flexural aspects of the body much more than the extensor aspects and particularly when the palms and forearms the inner aspect of the thigh the groin and the soles are affected (Fig 6*b*) Syphilitic eruptions are usually more noticeable when the patient has been undressed for a minute or two and the skin is colder Itching is usually absent

The scraping test as for psoriasis may work in some of the lesions of psoriasiform syphilide but usually the scales are more adherent Diascopic examination will leave a faint brown stain because of the specific infiltration

When syphilitic lesions involve the flexures the axillae the natal cleft or the side of the scrotum and vulva although they may look like psoriasis there is a greater chance that they will be moist

Digital examination with the gloved hand often elicits infiltration If uncovered fingers are used they should immediately be cleansed with a swab soaked in biniodide of mercury and then washed

When the differential diagnosis from psoriasis is still in doubt it is important to look in the buccal and pharyngeal cavities Syphilitic cases may show white mucous patches at the sides of the tongue and soft palate snail track ulcers on the pharynx and tonsillar pillars and examination of the scalp may show thinning of the hair with patchy distribution the so-called moth eaten appearance whereas in psoriasis there is no patchy loss of hair

In psoriasis it is unusual to find lymphadenopathy but this is general in syphilis and the glands are hard (shotty) and more clearly defined than in other acute infections

When the evolution of the eruption is considered in the early stage lesions in the mouth and pharynx might be expected later the alopecia on the scalp and then the crusted lesions at the side of the nostril and angle of the mouth but this is not a hard and fast rule (*see* Chapter 18)

Scabies

The patient complains of irritation which is most marked at night when he gets warm Sometimes other members of the family are affected particularly those in very close personal contact with him If the history suggests scabies it is important to look at once at the clefts between the fingers and the anterior and ulnar aspects of the wrist and immediately search for burrows vesicles and pustules If this examination does not reveal anything diagnostic it will be necessary to undress the patient The picture then varies according to the frequency with which the patient may have changed clothing or bathed his tendency to scratch or the treatment he may have had He will be seen to be covered with a pink papular eruption on arms abdomen and legs and around the hair follicles of the forearm with scratch marks blood crusts and boil like lesions

On close examination the vesicles will be seen to be circular or oval solitary or grouped and frequently placed at the end of a very short grey wavy line which is the burrow of the acarus Apart from the finger clefts and the wrist the sites of election for the burrow are the point of the elbow the anterior fold of the armpit in the region of the gluteal fold of the buttock and around the navel and in men on the penis and scrotum the follicular eruption and scratch marks are often most evident on the forearm and wrists the lower half of the upper arm on the abdominal wall and on the buttocks the face usually escapes (Fig 7*b*)

In addition children particularly babies frequently have burrows or vesicles in the creases of the palms and soles Men sometimes have boils burrows or occasionally vesicles on the glans or shaft of the penis and the scrotum and in women the lesions may be around the nipples In cases of several weeks duration infection of scratches and burrows with staphylococci and streptococci may lead to whitlows and paronychia boils on the buttocks and abscesses in breasts and armpits Impetigo ecthyma or eczematization may follow (*see* Chapter 22)

Lichen planus

The history here is of intense irritation and the appearance of a rash An examination of the flexural aspect of the forearm for flat shiny purple papules and of the inside of the mouth for white lines opposite the lower posterior molar teeth can be

In certain cases the flexural aspects of joints are affected more than anywhere else, in particular the axillae natal cleft and around the scrotum and vulva. In those who are fat and in females who have pendulous breasts, psoriasis may develop under the breasts simulating intertrigo or monilial infection, and it may occur in either sex behind the ears around the navel and sometimes between the toes. Whereas in syphilis such lesions will almost certainly be moist in psoriasis they may be either wet or dry.

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CHAPTER 3

GENERAL PRINCIPLES OF TREATMENT

R MASON BOLAM

APPROACH TO THE INDIVIDUAL PATIENT

THE NEED for taking a careful history of the case is often overlooked in the rush of work and patients with skin disease tend to drift like chaff in the wind as their complaint does not seem to have the same degree of urgency as other medical and surgical emergencies

The patient is not slow to sense this and may soon begin to experience a feeling of depression and despair more especially if he or she is forced to stay away from work for some considerable time It is easy to see that an anxiety state may follow with insomnia and exaggeration of symptoms such as irritation leading to rubbing and scratching of the skin Efforts at treatment are defeated and the acute case merges into the chronic stage

When such a patient comes to consult his doctor the latter should try to put himself in the patient s position and time should be taken to inquire into the occupation conditions at work and the hazards which may be encountered

Home conditions too should be discussed and an idea will soon be obtained of the capacity of the patient to carry out treatment adequately or not

These inquiries serve two purposes one is to gain necessary information before deciding on a plan of action the other is to encourage the patient by taking an interest in his particular problem

War brings out the best in people but the aftermath is often accompanied by an increased callousness and indifference to the sufferings of one s neighbours It is all the more necessary therefore for the doctor to show that human kindliness which is associated with him by tradition

The patient with skin disease has not always had the attention he deserved and the subject of dermatology still fails to interest the medical student however good the teacher may be

It is incumbent upon the doctor be he general practitioner or specialist to give patients clear and simple instructions about the treatment of the skin eruption *attention to detail is* most important and will ensure a steady recovery There is no branch of medicine in which so many mistakes are made in *treatment and in* which so many wrong ideas are held by the patients

On the one hand medicaments are given out in quite inadequate quantities and are often too strong for a tender skin On the other hand it is a popular belief that all ointments should be well rubbed into the skin that antiseptics *must* be used and that a good wash with hot water will help things along

made at once If this examination does not confirm the suspicions, the patient must be undressed and examined It will be seen that the rash tends to be flexural although in severe cases it may be generalized (Fig 6a)

Close examination reveals small polygonal violaceous papules which have a shiny flat topped crust crossed by a white or greyish line These papules alone in lines or rings occur on the anterior aspect of the wrist the inner aspect of the ankle the penis and scrotum The tentative diagnosis may sometimes be confirmed by appearances in the buccal cavity

The extensor aspect of the forearm near the elbow is often involved and the lesions are surmounted by adherent scales simulating psoriasis on the shins a large number of lesions may simulate warts

It is important to remember that lesions may appear along the line of a scratch in lichen planus, psoriasis and infection with the wart virus, this is known as Koebner s phenomenon (*see* Chapters 14 17 29)

Dermatitis due to contact with chemical or physical agents

As a general rule contact dermatitis affects exposed parts so that the patient usually complains of a dermatitis on his hands and wrists perhaps on the forearms and in a small percentage of cases on the face especially the eyelids or the neck It is important to ask him at least once whether there are lesions on covered parts of the body, and in any case in which a report has to be made the patient should be fully undressed for examination This may reveal not only dermatitis due to contact with dust which has perhaps worked through an open shirt to the region of the crutch or down socks through the open end of boots or even down the leg producing a dermatitis round the ankle but also perhaps that the patient is a seborrhoeic subject with classical lesions on the middle of the chest the middle of the back, the armpits and umbilicus Possibly he has a scurfy head, a greasy face and moist sweaty hands

On close examination in the acute stage the picture is essentially of erythema with oedema and perhaps vesiculation The fingers may be so swollen that it is impossible to remove a ring and occasionally even to oppose the fingers and thumb After this inflammation has subsided the skin may remain cyanotic in hue and thickened at first with large scales and later as the condition improves with finer and finer scales This progressive decrease in the size of scales may be used as a guide to the progress of the patient and sometimes in the prognosis as two months will often elapse between the development of the acute erythemato vesicular stage and the return of smooth slightly pigmented almost normal skin

Contact dermatitis may however be due to something which affects the whole of the body such as too frequent bathing and the use of bath salts and soap or it may affect parts of the body exposed to linen which has been to the laundry and still retains some chemical An unusual case of this kind was a man with a dermatitis from hip to toes with no lesions on the body it had been his habit for over 30 years to go to bed wearing a pyjama jacket but no pyjama trousers (*see* Chapter 7)

GENERAL MEASURES AFTER DIAGNOSIS

The psychological problem

The greatest possible benefit will often accrue to the patient if a frank discussion of his or her problem is included in the scheme of treatment Many of the more generalized skin eruptions can be said to result from maladjustment on the part of the patient to surroundings at home or at work After taking the history it is necessary to adopt a firm line of approach towards treatment so that the patient has no doubt of the part he must play in order to help himself towards recovery Confidence should be instilled into the patient and he should be reassured that he will recover if he carries out the instructions

Economic and domestic worries often loom very largely in the minds of patients with skin disease and anxiety states are all too common

Many a patient has precipitated a major attack of what was a minor disability through overwork and lack of adequate rest and refreshing exercise

In skin diseases of childhood the parents may be largely responsible by the feeding of unsuitable foods and by fussing over the victim or by lack of control over their children The parents should be corrected in such cases

Correction of mistaken ideas about disease and treatment

(1) The disease is not something which has been caught For all practical purposes the only contagious diseases are (a) ringworm in all its forms (b) scabies pediculosis and other parasitic infestations (c) warts and molluscum contagiosum and (d) impetigo

(2) There is nothing shameful about having a skin disease and the victim must not suffer mental trauma by considering himself unclean

(3) All medicaments for external application should be applied with care Skin diseases are mainly manifestations of an inflammatory process and it is wrong to rub pastes and ointments *into the skin There are a few exceptions to this rule* and they include the more scaly and fixed eruptions such as psoriasis seborrhoea capitis and some hyperkeratotic conditions of the palms and soles

(4) Frequent changes of treatment are not necessary Success is much more likely to result from the proper use of a few well tried and often bland remedies

(5) The use of strong antiseptics before applying treatment is more likely to do harm than good Weak solutions of antiseptics have their place in the treatment of infected lesions of the scalp hands and feet

(6) The use of injections is not the acme of perfection in skin therapy

(7) Penicillin has a very limited use in dermatology and the patient must not expect otherwise

(8) Frequent bathing may bring much temporary relief and pleasure to the patient but the rubbing and scratching which often follow do great harm to an already inflamed and tender skin In most severe cases it is better to limit bathing

(9) Thick layers of cotton wool on top of ointment dressings or moist soaks are best avoided as they engender more heat and irritation

Three main possibilities need to be considered constantly in the treatment of skin diseases when progress is slow or when the condition has become worse

The doctor may have prescribed the wrong treatment the chemist may have made it up in the wrong way or more probably, the patient has applied the treatment incorrectly or added some embellishments and ideas of his own which were not intended In some cases the treatment is not applied at all

Criteria to be observed

Certain criteria need to be observed in the treatment of skin diseases

(1) A careful history of the case should be taken

(2) An assessment should be made of the patient's personal problem at his work and of his conditions at home His mental attitude to the disease should be studied

(3) The skin should be examined in good daylight The examiner should not be put off by looking only at the parts indicated by the patient a more thorough search will repay the effort It is always wise to examine the feet when shown an eruption on the hands tinea pedis is on the increase

(4) It is best to consider each case as a potential medical problem with some general disorder as a possible background for the external manifestations which are apparent Secondary anaemia and dietetic deficiencies are common in urban communities The psychological background becomes more important every day The elderly patient may have hypertension or glycosuria

(5) A plan of treatment should be evolved which is simple and can be carried out in the patient's home Careful instructions and sufficient supplies of medicaments to last until the next consultation should be given The patient should be allowed an opportunity to report if the disease appears to be taking the wrong course It is not uncommon for patients to think that it is quite in order for their skin eruption to get worse before it becomes better

(6) The doctor should remember to reassure and to encourage the patient who wishes to know if the complaint is a danger to others and whether he may expect to recover in a reasonable length of time

(7) Rest adequate sedatives and protection of the skin from injury by the patient form a large part of the treatment of the more severe dermatoses

(8) *Cheerful surroundings* relief of boredom by diversional therapy and an atmosphere of competence and hope all help in the recovery of a patient who has to be admitted to hospital

(9) Suggestions as to change of occupation must not be forgotten A chance to resume work of a cleaner and lighter type should be offered by the employer as an important step in the rehabilitation of the worker

(10) Further instructions should be given to the medical attendant when a patient leaves hospital or a relapse may occur only too quickly if the treatment is not continued at home

GENERAL MEASURES AFTER DIAGNOSIS

The psychological problem

The greatest possible benefit will often accrue to the patient if a frank discussion of his or her problem is included in the scheme of treatment Many of the more generalized skin eruptions can be said to result from maladjustment on the part of the patient to surroundings at home or at work After taking the history it is necessary to adopt a firm line of approach towards treatment so that the patient has no doubt of the part he must play in order to help himself towards recovery Confidence should be instilled into the patient and he should be reassured that he will recover if he carries out the instructions

Economic and domestic worries often loom very largely in the minds of patients with skin disease and anxiety states are all too common

Many a patient has precipitated a major attack of what was a minor disability through overwork and lack of adequate rest and refreshing exercise

In skin diseases of childhood the parents may be largely responsible by the feeding of unsuitable foods and by fussing over the victim or by lack of control over their children The parents should be corrected *in such cases*

Correction of mistaken ideas about disease *and treatment*

(1) The disease is not something which has been caught For all practical purposes the only contagious diseases are (a) ringworm in all its forms (b) scabies pediculosis and other parasitic infestations (c) warts and molluscum contagiosum and (d) impetigo

(2) There is nothing shameful about having a skin disease and the victim must not suffer mental trauma by considering himself *unclean*

(3) All medicaments for external application should be applied with care Skin diseases are mainly manifestations of an inflammatory process and it is *wrong to* rub pastes and ointments into the skin There are a few exceptions to this rule and they includ the more scaly and fixed eruptions such as psoriasis seborrhoea capitis and some hyperkeratotic conditions of the palms and soles

(4) Frequent changes of treatment are not necessary Success is much more likely to result from the proper use of a few well tried and often bland remedies

(5) The use of strong antiseptics before applying treatment is more likely to do harm than good Weak solutions of antiseptics have their place in the treatment of infected lesions of the scalp hands and feet

(6) The use of injections is not the acme of perfection *in skin therapy*

(7) Penicillin has a very limited use in dermatology and the patient must not expect otherwise

(8) Frequent bathing may bring much temporary relief and pleasure to the patient but the rubbing and scratching which often follow do great harm to an already inflamed and tender skin In most severe cases it is better to limit bathing

(9) Thick layers of cotton wool on top of ointment dressings or moist soaks are best avoided as they engender more heat and irritation

GENERAL PRINCIPLES OF TREATMENT

Three main possibilities need to be considered constantly in the treatment of skin diseases when progress is slow or when the condition has become worse

The doctor may have prescribed the wrong treatment the chemist may have made it up in the wrong way or more probably, the patient has applied the treatment incorrectly or added some embellishments and ideas of his own which were not intended In some cases the treatment is not applied at all

Criteria to be observed

Certain criteria need to be observed in the treatment of skin diseases

(1) A careful history of the case should be taken

(2) An assessment should be made of the patient s personal problem at his work and of his conditions at home His mental attitude to the disease should be studied

(3) The skin should be examined in good daylight The examiner should not be put off by looking only at the parts indicated by the patient a more thorough search will repay the effort It is always wise to examine the feet when shown an eruption on the hands tinea pedis is on the increase

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It has been found that the antihistamine group of drugs such as Benadryl and Anthisan allay irritation and help the patient to obtain a good night s rest If taken throughout the day they may cause drowsiness but if a history of irritation at night is given then one capsule of Benadryl (50 milligrams) after tea and two at night or one tablet of Anthisan (0 1 gramme) and two at bedtime will often be helpful

Severe degrees of irritation may call for continuous narcosis which can be continued for several days

For prurigo Sequeira Ingram and Brain (1947) suggest Omnopon and scopolamine taken for a week

Aperients

For general use the traditional white purgative mixture is of distinct value The following is an example and can be taken once each night until a regular habit has been established

Mag Sulph – – – –	60 gr
Mag Carb – – – –	15 gr
Pulv Zingib – – –	1 gr
Aq Menth Pip – – – –	ad 1 oz.

In very young children irregularity of the bowels may be corrected by small doses of Hydrargyrum cum Creta (*B P*) whereas the following pill will be found to be effective in persistent constipation in adults

Pil Hydrarg – – – –	¾ gr
Ext Bellad – – – –	¼ gr
Ext Colocynth Co – – –	2 gr
Ext Hyoscy – – – –	1 gr

A half or one pill may be taken as necessary

Diet

Dietetic measures have always received considerable attention in hospitals on the Continent and it is only in recent years that recognition of the value of a scientific approach to this problem has been accorded in Great Britain The appointment of dietitians is a step in the right direction but doctors in general are not sufficiently acquainted with this subject An inquiry into the diet of many of the sufferers from severe and extensive seborrhoeic dermatitis will often reveal a marked preponderance of starches and carbohydrates The national tradition and necessity perpetuate this but if the tendency is corrected under strict supervision the patient will often benefit

Curtailment of proteins starches and carbohydrates is reasonable and a light diet with milk predominating is needed in severe generalized eruptions

A decrease in the consumption of alcohol should be considered when alcohol appears to be having a harmful effect

Special measures such as salt free and fat free diets have had their advocates but their usefulness has not been generally recognized

(10) When the skin is broken, it is better not to use gauze for dressings Serum oozing from the skin sets like cement in the interstices of the material and the delicate surface is torn and bleeds when it is removed Light cotton cloth such as *nainsook, old linen or the smooth side of white lint is often more suitable If the* dressing is obviously adherent to the damaged skin it should be soaked and removed with due care

GENERAL TREATMENT

Nursing

Self treatment is often bad treatment for dermatological patients and when *possible, internal and external remedies should be administered by a skilled and* sympathetic nurse, or by the wife or husband of the sufferer after they have been given careful instructions by the medical adviser

Attention to detail is important in the nursing of patients suffering from a skin disease

Enthusiasm, confidence and gentle handling of the skin will have a reassuring effect on the sufferer and words of encouragement have their rightful place in the therapeutic scheme for each patient

Infinite pains should be taken in the dressing of extensive eruptions and much patience is needed when the patient is irritable

General nursing principles should not be forgotten when dealing with dermatological cases Prevention of bedsores and contractures, *the need for regularity of* the bowels the testing of urine, the provision of air rings water beds back rests and leg cages should all receive attention

Rest

Rest for the patient who is worn out by persistent irritation and rest to the inflamed skin are most important in many acute and chronic skin diseases A spreading eruption can often be checked by insisting on complete rest in bed for a few days

Removal of the patient from external irritants at work and the curtailment of exercise may speed recovery and encourage him to persevere with treatment

It is not easy to impress upon the patient the necessity for rest when he feels perfectly well and has been taught to regard a rash as trivial and easily curable

Sedatives

These appear to have become increasingly important in the treatment of skin diseases many of which are associated with an unstable psychological background They may have to be given for long periods at a time and in full dosage to allay severe irritation and to induce restful sleep

The use of bromides is quite permissible as the number of cases of sensitivity to these salts is very small indeed Barbiturates are often used and phenobarbitone $\frac{1}{2}$ grain morning and evening taken over a number of weeks is often effective in the emotional state associated with rosacea and hyperidrosis

Bismuth

In the form of the oxycarbonate bismuth is used in infantile eczema with sodium bicarbonate glycerin and water as a mixture 3 times daily and it also has its place in the treatment of some cases of rosacea

Intramuscular injections of bismuth salts are favoured by some in the treatment of lupus erythematosus It is usual to give 2 millilitres into alternate hips at weekly intervals for 10 weeks

Calcium

Calcium given by mouth seems to have a very limited use and is badly absorbed but calcium with vitamin D has helped some sufferers from chilblains Calcium by intravenous injection in the form of the thiosulphate or gluconate has a very definite effect in limiting oedema pain and exudates in acute dermatoses Daily injection of 6 millilitres of a 10 per cent solution of these compounds may be continued for 7–14 days with obvious relief of irritation and swelling in many cases

This remedy will often prove successful in acute urticaria and in my opinion it deserves wider recognition It must be given very slowly to avoid an undue heating effect and it is lethal to the tissues if injected outside the vein

Glandular extracts

These extracts should be used with caution as their effect is often profound especially if taken for a long time Adrenaline has a definite place in the relief of acute urticaria or of angioneurotic oedema Slow subcutaneous injection of 5 minims of 1 1000 solution is the usual dose

Ovarian extract should not be used indiscriminately but it is useful in some cases of senile pruritus and will occasionally produce striking improvement in severe acne of male and female Stilboestrol 1–2 milligrams daily may be given for 2 months in old people or males but in young females 1 milligram thrice daily for 2 weeks after the menstrual period can be given for 3 months with safety

Ethinyl oestradiol is so potent that its use should be restricted at present to cases in which harmful results are not likely to ensue

Anahaemin given in a single injection of 4 millilitres or pituitrin given intra muscularly in doses of 1 millilitre on 3 successive days may relieve pain in severe cases of shingles

Thyroid extract is used in ichthyosis scleroderma and psoriasis It may be needed in other skin conditions in elderly female patients particularly when they show symptoms of thyroid deficiency

Gold

This is still the first choice in the treatment of lupus erythematosus but care must be taken to avoid unpleasant sequelae such as albuminuria dermatitis or liver damage Gold sodium thiosulphate is given once weekly by intravenous or intramuscular injection for 8–10 weeks Dosage is found to vary greatly in

Baths

Conflicting opinions are held about the merits or otherwise of bathing in the *treatment of skin diseases*

In general it is a wise precaution to see that the bath is taken under supervision as much unnecessary trauma may be *prevented The fitness of the patient should* be considered before giving instructions as to bathing and if this is at all in doubt the bath should not be permitted

Elderly and infirm patients or patients who are running a temperature are better without baths and as a rule babies with infantile eczema and severe cases of seborrhoeic dermatitis with *marked inflammation of the skin should have their* bathing curtailed drastically

The bath should not be too hot and should be more in the nature of a soaking *of the skin than any vigorous toilet of it*

It is not uncommon to hear that the patient has had no bath for several weeks *and here a judicious warm soak may* do much to make the sufferer more comfortable and to raise his morale

Soap should be used sparingly when the skin is more or less intact and there is no particular advantage to be gained from the use of medicated soaps Softness of the water makes for a more soothing effect and substances which can be added are *the carbonate and bicarbonate of soda (8 ounces)* starch or *bran (1–2 pounds in a* muslin bag) and Liquor Picis Carbonis (*B P*) (2 ounces) to a 25 gallon bath

When the skin is infected and serous or purulent discharges are present potassium permanganate crystals (½–1 drachm) to make the water a bright red colour will be more helpful

TREATMENT BY DRUGS

Antihistamine drugs are of distinct value in the control of allergic manifestations such as urticaria One of the proprietary preparations (50–100 milligrams) may be given 3 times daily with an extra dose at night as necessary but drowsiness may preclude the continuation of this amount for long Apart from this it seems to be quite safe to continue to take these drugs for several months if necessary and they help to relieve irritation in many skin disorders when this is a prominent symptom

Arsenic

Arsenic may be given in the form of Liquor Arsenicalis (*B P*) in increasing dosage by drops, to patients suffering from psoriasis and dermatitis herpetiformis Outbreaks of vesicles in the latter disease may be controlled by giving 5 7 or 10 minims of the drug 3 times daily but it should only be given for a few weeks at a time and should be interspersed with rest periods to prevent ill effects such as warty excrescences pigmentation or even epithelioma formation which may *result from a prolonged administration*

Some patients complain of sickness or pain when given arsenic in liquid form and the desired result may often be obtained in psoriasis by giving Asiatic pill one or two daily for 4–6 weeks

Arsenic is of some use in certain cases of chronic eczema and in lichen planus

be made at intervals to detect any abnormal fall in the white cell count or haemoglobin

Vitamins

Vitamins have been given in rather indiscriminate fashion of late years Their use should be limited to dermatoses in which there are definite signs of deficiency or to subclinical deficiencies when careful inquiry suggests that an unsuitable diet is being taken

There is some evidence to suggest that high dosage of vitamin A vitamin E and vitamin D are efficacious in follicular keratoses lupus erythematosus and cutaneous tuberculosis respectively

Convincing results have been obtained in lupus vulgaris by giving 100 000 or 150 000 units daily of vitamin D_2 over several months due precautions being taken to detect any signs of intolerance

Injections

Arsenic bismuth gold and manganese are all used in chronic infections with varying success The first three may be given in lupus erythematosus whereas manganese in colloidal form or as manganese butyrate is given intramuscularly for boils

BAL (British Antilewisite) has been used by intramuscular injection in toxic dermatoses due to heavy metals such as arsenic or gold Good results have been reported in arsenical dermatitis especially in arresting the acute spreading stage Dosage suggested is 4 injections in 24 hours for the first 2 days then 2 injections daily for 2 days then 1 injection daily for 2 more days but in practice this is not easy to carry out and 2 injections for 3 days followed by 1 injection daily for 7 days may be more suitable

Some painful reactions with occasional abscess formation have been noted after giving BAL

Non specific protein shock has been used in the treatment of the more chronic skin diseases especially those of an allergic type Results may be said to be extremely variable and much critical observation without bias is needed to decide whether improvement can be attributed to this form of treatment or not

Autohaemotherapy has been used in the treatment of persistent urticaria furunculosis and chronic psoriasis Ten millilitres of whole blood are taken from an arm vein and are introduced into alternate buttocks once weekly for 8–10 weeks Sterile milk injections and peptone are other substances used by intra muscular injection whereas intravenous injection of T A B with increasing dosage is given to raise the temperature every 3–5 days in chronic intractable dermatoses provided the patient is fit enough to stand this rather drastic treatment

Vaccine therapy is given for furunculosis pustular acne and sycosis barbae Results are again variable whether a stock vaccine a detoxicated vaccine or an autogenous vaccine be given Staphylococcus toxoid is used once or twice weekly for persistent boils It is usual to give increasing doses by subcutaneous injection

different clinics and is often increased during a course As a standard dose 0 05 gramme is well tolerated

Mercury

For lichen planus mercury is given in the form of Liquor Hydrargyri Perchloridi (*B P*) 30–60 minims 3 times daily for several weeks for flat warts it may be given in the form of pilulae hydrargyri iodidum viride ½ grain once daily for one month

Penicillin

After being tried in many skin conditions penicillin has found its correct place in internal therapy by injection for infective conditions in which penicillin sensitive organisms are found

Three hourly injections of an aqueous solution have been given day and night using 20 000–30 000 units per injection until 500 000–2,000 000 units have been given in accordance with the *severity of the case and the response to treatment* Larger doses of aqueous penicillin are now given 6 hourly A second method is to give penicillin in oil and wax twice daily in doses of 125 000 units or more This is often effective and does not necessitate admission of the patient to hospital Boils erysipelas erysipeloid many infected dermatoses and pustular folliculitis should respond to penicillin injections

It should be remembered that a severe urticaria may follow these injections

Salicylates

Sodium salicylate may be given with advantage in the acute spreading stage of psoriasis and it appears to have a beneficial effect if given 3 times daily for 7–10 days in erythema multiforme

This drug may have a further use in the skin manifestations of acute *rheumatism* which are becoming more frequent

Sulphonamides

The sulphonamide drugs have a definite use in dermatology and more especially in acute and subacute infective conditions such as impetigo otitis externa ecthyma folliculitis pustular acne infected scabies and sycosis barbae

The particular sulphonamide used *should of course depend on the organisms* which predominate in each condition and it is found that smaller doses can be given than in the acute infections though a quicker result may be obtained by giving the usual loading dose and continuing the drug 4 hourly for 3 or 4 days with strict observation for any signs of intolerance such as acute dermatitis or *renal complications*

A full course of sulphapyridine may be followed by a maintenance dose of 3 or even 2 tablets daily for some weeks in cases of dermatitis herpetiformis and the same drug may be given with success in the treatment of molluscum contagiosum and lupus erythematosus When continuous therapy is given blood counts should

(5) Weak solutions and a low percentage of active ingredients are most effective

(6) A frequent changing of remedies is not good treatment

(7) The patient should be protected from himself by the application of comfortable bandages as much damage is done by rubbing and scratching A *crepe* bandage is often useful in this respect but it must be adjusted with a good safety pin or it will soon work loose

Lotions

Lotions are of two types Those of the first type are simple aqueous solutions such as Lotio Plumbi cum Opio (*B P C*) weak solution of lead subacetate eusol normal saline solution ½ or 1 per cent solution of silver nitrate boric lotion and 1 p r cent solutions of aniline dyes Most of these are applied as moist soaks using old linen cotton or white lint rather than gauze and the dressing can be allowed to dry by evaporation or it may be kept moist by covering with oiled silk or jaconet

The other typ of lotion contains powder in suspension Calamine lotion is the classical example of this group This is applied by dabbing on to the skin though it may be used as a soak The water in the lotion evaporates and the powder which is held in suspension by glycerin adheres to the skin

In practice a lotion containing more powder than the *British Pharmacopoeia* formula will be found to be more effective

Calamin – – – –	8
Zinc Oxid	8
Glycer – – – – –	6
Lime Water – –	ad 100

Emulsions

Emulsions which have proved of value are the well known emulsion of benzyl benzoate 20 per cent used in the treatment of scabies and an emulsion of Mickraform sulphathiazole 20 per cent which deserves wider recognition in the treatment of imp tigo and can be used without causing sensitization of the skin in most cases

The latter is painted on twice daily for 3 days after initial cleansing of the crusts with warm saline solution and it is then allowed to wear off

Powders

These are inert substances for the most part When dusted on to the skin they exert a cooling and protective effect Talc zinc oxide starch and boric acid are commonly used The following preparation may be used for intertrigo

Acid Salic l – – – –	2
Zinc Oxid – – –	48
Talc – – – – –	50

The proprietary Fissan Dusting Powder (plain) is a useful and elegant preparation Many fungicidal foot powders are on the market These have their greatest use in the treatment of tinea pedis associated with hyperidrosis and they should be massaged into the skin of the sole and into the toe clefts for some minutes rather than dusted on to the foot

but a severe local or constitutional reaction may call for a modification in the amount given The percentage of successful results from vaccine therapy is not very high

Technique

Finally a plea must be made for an accurate and painless technique when giving intramuscular injections The upper and outer quadrant of the buttock or the lateral aspect of the thigh are the sites of choice A needle of considerable length and bore (Imperial Standard Wire Gauge No 20) is gripped tightly between the side of the thumb and the border of the hand, that is in the thumb cleft The hand is smacked smartly on to the buttock high up and wide out when the needle will be introduced painlessly to the required depth and the syringe can then be attached gently but firmly to give the injection slowly

Constant sharpening of hip needles is needed and deep massage after the injection will help to disperse the substance introduced and save unnecessary pain or stiffness

It is not uncommon to see needle marks studded all over the buttocks in patients who are having 3 hourly penicillin injections This is bad technique as the patient has to sit on a sore area whilst in bed

LOCAL TREATMENT

Relief of symptoms and eradication of a skin disease is brought about by a combination of local and general treatment with the former playing a greater part in bringing about recovery in many cases

Simple remedies are often most effective and correct application with strict attention to detail should be required at all times

The physician should recognize the various stages a particular skin eruption may pass through and he should apply the appropriate treatment for each stage at the right time

The cardinal signs of inflammation namely heat swelling redness and irritation are seen in acute skin eruptions and the object in view is to reverse these manifestations and to eliminate the causal agent

Aggravation by external irritants should be prevented and this will often mean complete rest to the parts affected so that heat dust and liquids of a harmful nature are eliminated instructions should be given to the patient to avoid the application of strong antiseptics or unsuitable ointments

First principles to be observed are given below

(1) Collections of crusts or scales should be gently removed A weak solution of sodium bicarbonate or liquid paraffin is useful for this purpose

(2) Cool down and dry up a hot raw inflamed surface by the application of lotions

(3) Oils or greases may be applied to dry scaly eruptions

(4) Pastes and oil in water emulsion bases are best used for irritable conditions when weeping of the skin is slight

the dry scaly stage of ringworm is *unguentum acidi salicylici compositum* or Whitfield's ointment consisting of salicylic acid 1 part benzoic acid 1 part coco-nut oil 12 parts soft paraffin 16 parts

Emulsion bases

Emulsion bases are now used extensively and the indications for their use are well described by Goldsmith (1946) They have many definite advantages in that medicaments which are water soluble can be presented in oil in water emulsions with ease they tend to vanish into the skin and they are easily removed with the minimum of friction and trauma by soap and water or water alone It is doubtful if they will replace the older creams ointments and pastes but a more critical comparison is needed to decide this question

Pastes

Pastes contain equal quantities of powder and soft paraffin and will absorb moisture by virtue of their powder content The classical examples are Lassar's paste consisting of zinc oxide 24 per cent starch 24 per cent salicylic acid 2 per cent soft paraffin 50 per cent and zinc paste containing zinc oxide 25 per cent starch 25 per cent soft paraffin 50 per cent These preparations are very stiff and are difficult to spread so that in practice a softer paste is to be preferred Zinc oleate 4½ parts zinc oxide 3 parts starch 3 parts liquid paraffin 8 parts and soft paraffin 22 parts will make a sound paste which can be spread on nainsook cotton or linen and will be suitable for most cases of the weeping eczema type The effect of such applications may be largely mechanical and protective but their efficiency cannot be denied

In regard to this form of external therapy further details about the method of applying ointments and pastes are well described and illustrated by Percival (1947)

Medicaments can be added to the above pastes according to the effect required thus in chronic irritable eczema tar is needed for relief of irritation and from 1 to 6 per cent may be included with the paste Ichthyol ½–1 per cent is used to stimulate healing Ammoniate of mercury 1 3 per cent has been used in infective conditions in a paste as also has sulphathiazole 5 per cent

The dangers of sensitization of the skin must not be forgotten when active agents are employed externally and a list of potentially harmful agents would include iodine picric acid acriflavine sulphur resins in adhesive plaster and the sulphonamide drugs (often in powder form)

Other substances used in too high a percentage strength will irritate and prevent healing Some proprietary antiseptics and ointments fall into this category

PHYSICAL AGENTS

Carbon dioxide snow

Carbon dioxide snow is used to a limited extent in dermatology either as a solid stick or as acetone snow which is a slush made by adding liquid acetone The latter is superior Capillary haemangiomas can be treated by firm pressure for 30 seconds

Creams

Creams are *emulsions which contain* powder *oil* and water and when properly made they should not separate out into their constituent parts but should remain as a true emulsion

They are *soothing* cool the skin and are used when the drying effect of a lotion is too severe and some lubrication of the skin is needed

The following formula is thicker than the average cream and with 4 per cent of brilliant green added it can be painted on to the red raw dermatitis of legs twice daily till exudation has ceased It is then allowed to wear off gradually and is covered with a piece of clean cotton or linen cloth and a *crepe* bandage

Calamin	–	12
Pulv Zinc Oxid	–	10
Paraff Liq	–	25
Tenepol	–	3
Aq	–	ad 100

Instructions for making Melt Tenepol and liquid paraffin at 60 C add some of the water (warm) mix powders with water to a cream add oils to cream and adjust with water to volume

The more modern emulsion bases are used to produce creams which have some penetrating effect so that active ingredients can be brought into closer contact with the skin and its appendages

Penicillin cream is widely used and is much less likely to produce sensitization of the skin than is penicillin ointment

A sound preparation is given below

Lanette Wax SX	–	10
Paraff Dur	–	1
Paraff Liq	–	2
Phenoxetol	–	2
Aq dest	–	q s
Penicil Sodium	–	1 000 units per g

Ointments

Ointments are used in dry scaly eruptions of the skin and they are not suitable for application to moist oozing surfaces They soften the skin and make it supple when it has become hard and is inclined to crack The main base of most ointments is soft paraffin of mineral origin and with this may be mixed the mineral oil liquid paraffin or vegetable oils such as pea nut *oil* and almond *oil Other bases* are the animal fats lard and lanoline

A standard ointment for psoriasis might be the following

Liquor Carbonis Detergens	–	4 min
Hydrarg Ammon	–	5 gr
Acid Salicyl	–	10 gr
Paraff Liq		
Paraff Moll	–	aa 1 oz

A suitable bland greasy preparation for use in the acute stage of psoriasis is made of zinc oleate soft paraffin and liquid paraffin Another ointment for use in

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and when treating warts a fine point is needed on the stick so that a blistering effect is produced in one minute on the wart and for a very small area around it The effect of snow is *superficial so that the removal* of cavernous haemangiomas in babies cannot be expected though treatment of the bright red surface is probably justifiable if the parents request it In some cases of fixed lupus erythematosus judicious application of solid snow for a few seconds at intervals of some weeks appears to help this condition to resolve

Cautery

The cautery is useful in the destruction of small simple growths such as fibromas and warts and in the treatment of stellate or spider naevi A fine platinum point is applied to the lesion and the current is turned on momentarily to destroy the *central blood* vessel *of the* naevus *or for a slightly longer* time when removing warts or simple tumours

Diathermy

In diathermy treatment a fine steel or platinum needle is used for the same type of lesions treated by the cautery and in addition it may be used to remove superfluous hair if a very small current is passed Multiple warts may be treated by this method under intravenous anaesthesia and the scarring should be minimal or absent if little current is used for each lesion

Electrolysis

Used for the removal of superfluous hair electrolysis is successful in the hands of a persevering and careful operator but it is painful and tedious for the patient who is often left with some scarring of the skin

Hairy moles fibromas and stellate naevi are treated by electrolysis with good results

Radium and radon

Radium and radon have their use in the treatment of rodent ulcers and epitheliomas but details of treatment with these substances are not included here The subject is highly technical and methods of application are rightly referred to the radiotherapist or to those who have had special training in this field

Thorium X

Thorium X emits *alpha* rays and has only a superficial effect upon the skin so that it can be used with comparative safety in varnish in an alcoholic solution or as an ointment in the treatment of superficial capillary haemangiomas

It is usual to apply this *substance at monthly intervals for 10 or 12 months* in a strength of 1,500 or 2 000 electrostatic units (E S U) and best results have been obtained in the paler naevi rather than in the deeper port wine naevi

Thorium X can be used in irritable skin conditions such as neurodermatitis pruritus ani lichen planus and in localized patches of psoriasis

The varnish or alcoholic solution is painted on accurately in two coats with a glass rod or a small brush and the part painted should not be washed for 48 hours

The skin should be cleansed first with ether and the application is removed with the same solvent after two days or is allowed to wear off

Radiotherapy

X ray therapy is an essential factor in the successful treatment of some skin diseases but x rays are a dangerous weapon in unskilled hands and should be used in dosage only when there is a wide margin of safety

The modern x ray tube is designed to work at an output of 50–100 kilovolts with a current of 2–5 milliamperes and treatment is usually given without the addition of extra filtration other than the equivalent of 0 5 millimetre of aluminium which is built into the tube The most useful rays emitted from a dermatological standpoint are soft rays and penetration by use of a harder ray is not often necessary

Dosage is measured in roentgen units (r) and it is usual to space treatments at intervals of 1–3 weeks Four treatments of 100 r or 3 treatments of 150 r may be given and then an interval of at least 3 months should be allowed before further exposures are considered It is wise for the patient to carry on his person a record of the total dose of x ray units received from all sources so that overdosage with permanent scarring does not result

Amongst other skin diseases which respond to this form of treatment are severe acne rosacea neurodermatitis pruritus ani eczema psoriasis paronychia lichen planus sycosis barbae otitis externa warts keloids and rodent ulcers

The dosage for the last three named diseases is much higher than for the others and may be in the region of 2 000 r for some types of rodent ulcer with extra filtration

Lead rubber or sheet lead of suitable thickness is used to screen the skin near the site of irradiation

X ray epilation of the scalp is still necessary in the treatment of scalp ringworm

Ultra violet light

Ultra violet light is given to the whole body or locally in dermatology The tonic effect of this remedy is of general value but the number of skin diseases which is likely to benefit is strictly limited Acne furunculosis alopecia lupus vulgaris perniosis and psoriasis may show improvement

General sunlight baths are given by carbon arc lamp or by mercury vapour lamp and exposures 3 times a week are beneficial

Dosage is increased at each sitting and as much of the body as possible is exposed

Rest periods should be given between the courses of treatment which might last for 8 weeks

Sunlight is contra indicated in tuberculosis of the lungs when there is any active lesion

GENERAL PRINCIPLES OF TREATMENT

Local treatment with the Kromayer *(mercury vapour) lamp or the Finsen* Lomholt (carbon arc) lamp is still necessary in resistant cases of lupus vulgaris and the aim is to blister a small area of the lesion with compression of the lamp on the skin to blot out the blood supply

When giving general sunlight treatment care should be taken to avoid a blistering effect and goggles should always be worn when near the lamp or conjunctivitis with oedema of the eyelids may follow The efficiency of the lamps should be ensured by regular changing of burners or carbons

PREVENTION OF SKIN DISEASE

The prevention of skin disease should not be neglected and preventive measures may save much time in treatment and avoid personal hardship to the patient and his family and a wastage of man power in industry

Dealing with this subject throughout man s life from childhood to old age the following observations may be pertinent

Seborrhoea of the scalp

Seborrhoea of the scalp in infancy may be the first sign of an impending infantile eczema and treatment of this simple and often localized condition may prevent its spread or avoid the onset of a papular or scaly eruption on a baby s face with subsequent generalization It is not uncommon to hear the mother say that she did not wash the child s head over the anterior fontanelle in case it did harm A gentle wash and an application of Unguentum Acidi Salicylici (*B P*) 2 per cent which has been softened may clear the condition and at the same time inquiry into the diet may lead to alterations which would help to prevent some cases of infantile eczema

Impetigo

Impetigo is common in young school *children and in girls it is often* associated with pediculosis capitis and with enlarged *glands in the neck which may go on to* suppurate This condition is preventable if more regular and searching head inspections are carried out by school medical personnel and if treatment is carried out by them under strict supervision and not left to indignant mothers who refuse to believe that their offspring *are infested*

Regular washing of hands and faces before meals and frequent scalp washes *should be encouraged*

Tinea capitis

Tinea capitis is always with us and here again skilled inspection under Wood s light will detect the infection often in its earliest stage and measures can then be taken to segregate *the infected* children whilst continuing their education and treatment

The lady almoner and the health visitor can explain the significance of the disease and help parents to protect others in the home as well as ensure the attendance of immediate contacts for inspection Rigid standards of treatment

and tests of cure should be aimed at as much of the spread is made possible by nurses and doctors reassuring the mother by telling her the condition is mild or has been cured by applying some simple ointment when in fact it is not cured and infected hairs can be demonstrated under Wood s light

Alopecia areata

Alopecia areata in children is often treated without effect because dental sepsis has been missed or gross tonsillar sepsis is disregarded Dental inspection and prompt treatment would save much unnecessary annoyance in this condition

Otitis externa

Otitis externa is a troublesome condition which may be associated with un treated seborrhoea capitis or with otitis media In either case it might be prevent able by treatment of the scalp and by more regular washing of the hair or by the detection of septic tonsils and adenoids and the removal of them thus preventing the spread of infection to the middle ear Education and inspection of the scalp or the throat with appropriate action could lower the incidence of this skin disease

Scabies

Scabies is a disease of youth and adult which is preventable Better housing and personal hygiene are needed to stamp out this irritating pest which is often spread by close personal contact through sleeping in the same bed Children should sleep separately and be bathed more often Careful investigation of all possible contacts is needed in this disease and treatment under supervision is the ideal to be aimed at

Warts

Warts have become so prevalent that steps are needed to control their spread Patients should be encouraged to have early treatment when only one or two warts are present and the family and school doctor can direct them to attend for treat ment at this stage There is some evidence to suggest that public swimming baths are responsible for the spread of plantar warts and molluscum contagiosum Precautions ought to be taken here and children or adults should be debarred from using swimming baths if suffering from either of these complaints

Acne

Acne in adolescence may be corrigible in part by altering the diet which is often stodgy and full of starches and carbohydrates

Seborrhoea of the scalp and excessive oiliness of the scalp and face may be checked here with advantage and greater interest should be aroused in personal hygiene and correct exercise

Contact dermatitis

Dermatitis due to contact with unsuitable medicaments is often seen and education of the public in the use of a few simple bland preparations would save much unnecessary suffering

Advice from chemists is often sought for some comparatively trivial eruption which is not thought to be worthy of the doctor s attention or the patient is urged to buy a proprietary remedy by a friend and much harm may be done by the application of an unsuitable preparation

The false idea that antiseptics must be used for all skin conditions and the tendency to apply all remedies by vigorous rubbing should be counteracted The medical profession should be made aware of the grave consequences which can result from using active medicaments in too great a strength and of the dangers of prolonged application of sulphonamide preparations of gold and arsenic injections and of sensitization from oral administration of the sulphonamides

Seborrhoeic dermatitis

In seborrhoeic dermatitis correct treatment in the early stages should be stressed and this should include regular attention for several degrees of seborrhoea of the scalp gentle application of bland remedies in the early stages of the skin rash with adequate sedatives when irritation is severe and firm handling of the psychological aspect of this very common complaint

Industrial dermatitis

Industrial dermatitis is far too prevalent and much of it is preventable by the correct selection of personnel for work where occupational hazards are greatest Medical examination of applicants for work would enable men and women to be directed to work of a suitable character when there is a known history of skin disease Little attempt is made in the coal industry to help a man who has broken down with dermatitis He is sent back to his original work in many instances and soon relapses

Washing facilities are often lacking at work in factories and protective clothing or gloves are not provided or compulsory

Rehabilitation and resettlement of sufferers from skin diseases is long overdue

Fungus infections

Fungus infections are most persistent and crippling when they come on hands and feet but greater attention to the personal hygiene of the feet would prevent many cases of this disorder or keep the condition in check so that time would not be lost from work

A routine steeping of the feet and the use of fungicidal powders by massage into the skin should be encouraged in the early stages of the disease and the significance of trouble in the toe clefts should be brought before the public

Eczema

Eczema as seen in housewives and charwomen can be avoided to a large extent by the use of soft water and good soap and by the limitation of contact with harmful powders detergents strong antiseptics and strong solutions of washing soda

PREVENTION OF SKIN DISEASE

The regular use of simple emulsions of lanolin and liquid paraffin in the home saves much wear and tear on the hands

Increased use of mechanical washing machines would save prolonged immersion of hands and arms in soapy and dirty water when washing clothes

There is a wide scope for initiative and foresight in planning measures to prevent many of the most common skin diseases which cause such a wastage of industrial man power and which occupy an increasing number of doctors and nurses in their treatment

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CHAPTER 4

COMMON CONGENITAL DISORDERS OF THE SKIN

A D PORTER

UNDER this heading are described affections of the skin which are believed to result from failure of certain cells to develop in a normal manner The anomaly may be present at birth or may only appear much later When localized the term naevus is applied when widespread the affection is often described as naevoid

It is well nigh impossible to classify the conditions satisfactorily on a scientific basis, and no attempt to do so is made here For convenience of reference the various disorders are grouped simply according to the tissue or part of the skin chiefly involved

CONGENITAL ANOMALIES CHIEFLY AFFECTING THE EPIDERMIS

Ichthyosis

Ichthyosis is a congenital abnormality of cornification in which the skin is dry and scaly

Aetiology

The condition is hereditary and familial but the cause remains unknown Low values of vitamin A in the plasma have been reported in a number of cases

Morbid anatomy

The stratum corneum is thickened and rests on a poorly developed stratum *mucosum and the granular layer may be absent The hair follicles are dilated* and plugged with horny material and the sebaceous glands are atrophied The subcutaneous fat is diminished

Clinical features

Although the affection is congenital it is seldom noticed until the end of the first or second year In mild cases the skin merely appears to be unusually dry (xeroderma) It is of a dull greyish colour harsh to touch lustreless lacks its normal gloss and sheen and is covered with fine powdery scales

In severe ichthyosis the scales are large thick and of a dirty brown or blackish hue They are of all shapes frequently more than one inch in length separated by fissures or attached at the centre and curled up at the edge occasionally a mosaic pattern is produced resembling the cracks found in the glaze of china (Figs 10 and 11)

Except for the flexures which are often spared the whole skin is affected in varying degrees On the scalp and face the scales are very fine while the process is apt to be most severe on the extensor surfaces of the knees and elbows The hair is dry

and the nails are brittle they may be raised from the nail bed by hyperkeratosis The normal lines of the palms and soles are often exaggerated Plugs of horny material in the openings of the hair follicles may produce a condition resembling goose flesh similar to that which occurs in keratosis pilaris Ectropion is common

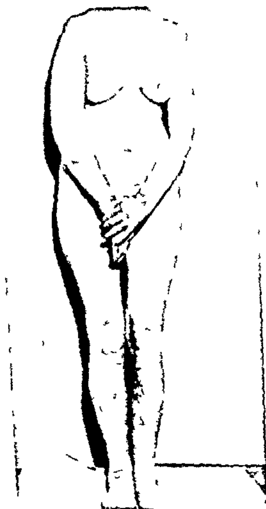


Fig 10 —Generalized ichthyosis

Once present ichthyosis continues throughout life and becomes more troublesome in cold weather when the natural secretions of the skin are lessened Conversely in warm weather when the sweat and sebum are more plentiful amelioration takes place During adolescence it is quite common to observe a considerable improvement Subjects of ichthyosis even in its mild form are exceptionally susceptible to attacks of dermatitis and eczema

Ichthyosiform erythroderma

A rare variety is that known as ichthyosiform erythroderma in which wide spread redness of the skin is followed by the development of scales The erythema may later disappear, leaving ordinary ichthyosis There is a tendency for the flexures to be involved in contrast with ordinary ichthyosis and bullae sometimes appear Ichthyosis foetalis is commonly classified under this title In the mild form the infant may survive though early death is to be expected Severe cases are usually either still born or succumb within a few days of birth The skin is

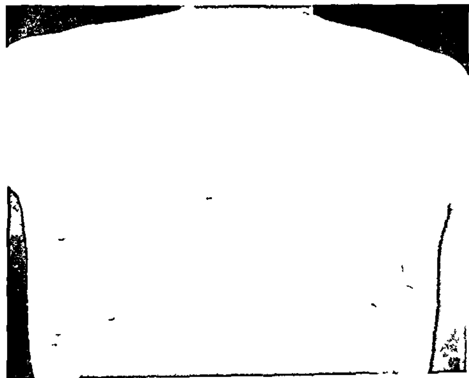


FIG 11 —Ichthyosis of the back

covered with thick hard plates (armour plates) separated by fissures Changes in the thyroid gland have been reported

Ichthyosis follicularis

In ichthyosis follicularis there are small papules over the hair follicles which are generally atrophied When the papules disappear they are replaced by minute scars causing permanent alopecia Loss of eyelashes and eyebrows together with baldness has been reported by MacLeod (1909) in cases beginning in infancy

Diagnosis

The dry scaly skin absence of inflammation lack of subjective symptoms long history and familial incidence make a characteristic entity not to be confused with any other

Treatment of ichthyosis

Extract of thyroid gland given in full doses especially early in life appears to be beneficial in certain cases Vitamin A has also been recommended but has not proved helpful in my experience If vitamin A treatment is tried 100 000–200 000 international units may be given daily for several months It is important to keep the skin soft and supple and this may be accomplished by applying suitable ointments For this purpose soft white paraffin lanolin glycerin mixed with water (25 per cent) olive oil lard and mixtures of the above are suitable A simple and satisfactory routine is to rub into the skin a little soft white paraffin after taking a hot bath and while the skin is still damp In severe cases with thick and hard scales salicylic acid 2–6 per cent in an ointment base may be useful A careful watch must be kept to make sure that whatever external application is used causes no irritation for the skin of an ichthyotic is easily inflamed For the same reason afflicted persons should avoid occupations which entail a hazard to the skin lest dermatitis be superimposed on ichthyosis

Keratosis pilaris

In keratosis pilaris (lichen pilaris or keratosis suprafollicularis) there are minute papules at the openings of the pilo sebaceous follicles

Aetiology

The di order often appears in more than one member of a family and may be hereditary The fr quent association with xeroderma and ichthyosis suggests a connexion with these maladies and it is possible that keratosis pilaris is merely a variant of ichthyosis in which the changes are confined to the openings of the follicles Deficiency of vitamin A is considered by some to be of aetiological import ance In a small number of cases examined by the author the vitamin A in the plasma was normal

Morbid anatomy

The papules consist of horny plugs which penetrate the mouths of the pilo sebaceous follicles and project above the general level of the skin Sometimes they cover a coiled up hair The mouths of the follicles are hyperkeratotic the deeper part and the associated sebaceous gland is sometimes atrophied The skin between the follicles may be normal or it may be hyperkeratotic In the corium slight round-cell infiltration and some dilated vessels are commonly found

Clinical features

The disease is often discovered in the first few years of life though no sign may be apparent until adolescence is reached or even later The essential lesion is a papule smaller than a pin s head dome shaped or pointed and usually the same colour as the surrounding skin though it may be red or purple (Fig 12) The papules are found chiefly on the exterior surfaces of the arms and legs but may be present on any part of the skin except on the palms and soles The papules remain discrete and can be scraped away leaving a small d pression Sometimes a hair projects from the tip of the papule or may be found coiled up beneath it The skin between

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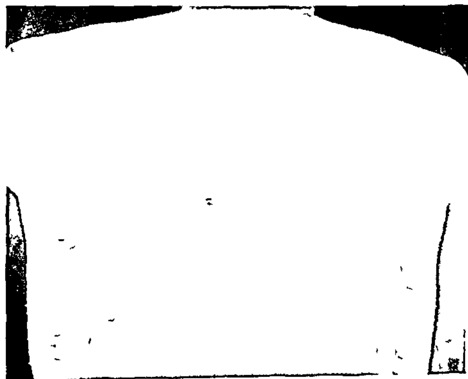


Fig 11 —Ichthyosis of the back

covered with thick hard plates (armour *plates*) separated by *fissures* Changes in the thyroid gland have been reported

Ichthyosis follicularis

In ichthyosis follicularis there are small papules over the hair follicles which are generally atrophied When the papules disappear they are replaced by minute scars causing *permanent alopecia* Loss of eyelashes and eyebrows together with baldness has been reported by MacLeod (1909) in cases beginning in infancy

Diagnosis

The dry scaly skin absence of inflammation lack of subjective symptoms long history and familial incidence make a characteristic entity not to be confused with any other

Hard naevi

As the name implies the chief characteristic of such naevi is the hard wart like surface (Fig 13)

Morbid anatomy

The important changes are in the epidermis and consist of hypertrophy in varying degrees of the stratum corneum and stratum mucosum



Fig 13—Unilateral hard naevi

Fig 14—Extensive unilateral hard naevi on scalp neck and left arm

Clinical features

The naevi appear soon after birth or perhaps many years later grow for a time and then cease to spread In colour they are usually a dirty brown The surface is rough resembling a chain of closely set warts On the limbs they tend to occur longitudinally and may extend from shoulder to waist or from groin to foot (linear naevi) (Fig 14) Sometimes irregular horny masses project for half an inch or



FIG 12 —Keratosis pilaris on arm of girl

the papules is frequently normal, though it may be dry and scaly, or even ichthyotic Symptoms are unusual apart from occasional complaint of itching and for this reason many of the very mild cases are overlooked Progress is slow, little change being noticeable over the years, and the affection tends to disappear with advancing age

Diagnosis

Keratosis pilaris may be confused with lichen spinulosus but the latter condition *is rare occurs chiefly in children and the lesions come out in groups each papule* being tipped with a horny spine The acuminate miliary papular syphiloderma *may be distinguished usually by its comparatively brief appearance and other signs* of the disease, but the serum should be tested in case of doubt

Papular eczema is more inflammatory itching is more marked the lesions are not confined to the pilo sebaceous follicles and tend to weep

Treatment

In many cases treatment is not required In other cases regular bathing is advisable Salicylic acid 2–6 per cent in an ointment is useful externally while benefit has been found from giving vitamin A though a few cases so treated by the writer did not improve Xeroderma or ichthyosis if present in addition should be treated appropriately



Fig 15—Tylosis of sole



Fig 16—Tylosis of heels—hyperkeratosis

more externally on the extremities (ichthyosis hystrix) or comedones and pustules may intermingle with the other elements (naevus acneformis unilateralis)

Treatment

The smaller naevi may be destroyed by diathermy and the larger ones excised

Keratodermia palmaris et plantaris

Great thickening of the skin on the palms and soles occurs in keratodermia palmaris et plantaris (or tylosis)

Aetiology

In many cases the disease is hereditary and several cases may occur in a family The actual cause of the abnormal cornification unfortunately remains obscure It must however, be remembered that an acquired form of tylosis results from such causes as syphilitic infection or from chronic arsenical poisoning

Morbid anatomy

There is hypertrophy of the stratum corneum the remainder of the epidermis and the corium being normal

Clinical features

Both palms and soles are covered with thick yellow semi translucent skin which occasionally extends on to the dorsal surface especially around the joints The margin is clearly defined and is often surrounded by an erythematous border The surface is rough and hard and deep fissures are frequently found although the normal lines of the skin are obliterated (Fig 15) When accompanied by hyperidrosis which is common, the skin has a sodden appearance Tylosis usually appears in the first few years of life though its onset may be delayed until adolescence or later and once present it persists throughout life The thick hard skin makes movement difficult and deep fissures may be extremely painful particularly on the heel or where they become infected (Fig 16) Very rarely epithelioma supervenes Other developmental anomalies are at times associated with tylosis such as ichthyosis, naevi and mental defects

Diagnosis

The thick yellow skin on the palms and soles chronicity of the disorder and familial occurrence usually make diagnosis easy Psoriasis occasionally attacks the palms and the soles and may cause difficulty especially when it produces diffuse hyperkeratosis instead of small discrete lesions (Fig 17) Typical psoriatic plaques can nearly always be found elsewhere however and the histology is characteristic Hyperkeratosis of the soles—more rarely of the palms—may occur with ringworm infections intertriginous lesions between the toes and fingers or the presence of vesicles suggest the diagnosis which may be confirmed by identifying the fungus by microscopic examination of material from these sites In keratoderma climactericum small circumscribed patches of hyperkeratosis appear on the palms and soles most frequently in middled aged women with other signs of menopausal dysfunction such as obesity and hypertension It is frequently accompanied by evidence of

develop normally into horn cells The actual cause is unknown though some error in the metabolism of vitamin A seems to play a part Many cases exhibit deficiency of this vitamin as shown by the low content of vitamin A in the plasma and by poor dark adaptation while the response to vitamin A therapy is sometimes remarkable

Morbid anatomy

The characteristic microscopic features result from failure of certain cells of the stratum mucosum to develop into horn cells in a normal manner (dyskeratosis) The cells involved lose their prickles become detached from neighbouring elements and by so doing form fissures in the deeper layers of the stratum mucosum The detached cells exhibit a thickened cell membrane with hyalin or vacuolated protoplasm and pyknotic nuclei (*corps ronds*) As these dyskeratotic cells approach the surface they may be represented by no more than a collection of granules the remnants of their nuclei (grains) The stratum corneum is thickened and dips down into the stratum mucosum as horny plugs especially about the pilo sebaceous follicles while many of the cells retain their nuclei (parakeratosis) The stratum mucosum shows hyperplasia and finger like growths extend downwards into the dermis where slight round-cell infiltration is found



FIG 18 —Darier s disease

Clinical features

The most characteristic lesion is a small brown papule not much larger than a pin s head These papules may appear in any part of the body but are most numerous on the neck (Fig 18) the lower part of the abdomen and flanks on the scalp and on the forearms and legs below the knees (Fig 19) Each individual papule begins as a greyish elevation sometimes situated over a hair follicle which soon becomes brown and slightly greasy The papules usually remain [illegible]



Fig 17 —Early localized tylosis Note islets of hyperkeratosis developing on red sweating palm

neurodermatitis elsewhere and a similar condition has been observed in men When tylosis develops in adults the possibility of syphilitic infection and the effect of taking arsenic must be considered In the former the lesions are often serpiginous in outline

Treatment

In the acquired type the cause should of course be removed if it can be discovered Otherwise little can be done but to keep the skin soft and pliable with 4–10 per cent salicylic acid in an ointment or plaster X rays may produce an improvement which is seldom more than temporary and this treatment should be used with the utmost care

Darier's disease

This is a rare disorder in which pigmented papules in the skin are prevalent and flat wart like lesions appear on the backs of the hands

Aetiology

The condition is often inherited and familial and has been noted in three generations It appears to be transmitted by a simple dominant In many cases the intelligence is of a low order and frequently associated with the condition are developmental anomalies such as soft and vascular naevi The unusual appearance of the skin is apparently due to failure of certain cells in the stratum mucosum to

likely to undergo spontaneous remissions Seasonal variations occur in certain cases and pregnancy may produce temporary alleviation

Diagnosis

Darier s dyskeratosis may be confused with acanthosis nigricans but in the latter which is extremely rare the disease is not familial and usually begins in middle life The pigmentation is darker and the scalp unaffected and malignant disease of the vi cera is frequent The exceedingly uncommon condition of epidermodysplasia verruciformis with its numerous flat wart like lesions may resemble Darier s dyskeratosis closely Microscopic examination of an excised papule will settle the diagnosis in a doubtful case

Treatment

Vitamin A should always be tried although not every case will respond to it 100 000–200 000 international units should be given daily by mouth for at least three months If no improvement is noted after this period it is unlikely that the case will benefit from this form of therapy In many patients however the im provement is marked and to these vitamin A should be administered continuously until progress ceases The dose may then be reduced to 50 000 international units or so daily Alternatively the vitamin may be stopped altogether for several months to be resumed in full doses at the least sign of relapse

External application of an ointment containing 2 per cent sulphur and 4 per cent salicylic acid will considerably improve the appearance of the skin in many obstinate cases

Epidermolysis bullosa

Epidermolysis bullosa (epidermolysis bullosa hereditaria) is a rare affection in which bullae appear in the skin as the result of trauma

Aetiology

The caus is unknown but the condition is often inherited and the familial incidence is striking

Morbid anatomy

In mild cases vesicles and bullae develop within the epidermis while in the severe form they are subepidermal In the corium the blood vessels are dilated and the elastic tissue is diminished Epithelial cysts may occur in the scar tissue resulting from healed lesions

Clinical features

The characteristic and noteworthy feature of this malady is the production of bullae in the skin by irritation or trauma they do not occur spontaneously The parts commonly affected are those most exposed to injury such as the feet ankles knees buttocks hands and elbows The disease usually begins in infancy but the acquired type may develop during adult life The bullae contain serum which may become infected sometimes they contain blood In the mild form the bullae generally heal without leaving any scars and the mucous membranes are seldom

may run together to form crusted sheets or vegetating masses in moist situations (Fig 20) The appearance of the scalp resembles that of seborrhoeic dermatitis On the backs of the hands there are flat wart like lesions and on the palms careful examination will reveal minute depressions where horny plugs have fallen out

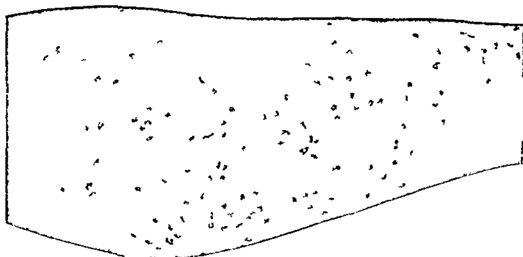


Fig 19 —Darier s disease on leg of girl



Fig 20 —Darier s disease close up view of papules

The nails may be thickened brittle and discoloured Scattered papules are frequently visible on the mucous membranes of the bucco pharyngeal and genital regions the oesophagus is also sometimes involved (Brunauer 1937) The affection usually begins in the first few years of life and is very persistent Sometimes it appears for the first time in adult life and is then in the author s *experience more*

Diagnosis

The combination of pigmentation atrophy telangiectasia and warty growths beginning early in life and associated with photophobia forms a characteristic entity which will prevent errors It must be remembered however that similar changes may be produced in the skin by x rays great exposure to sunlight (sailor s skin) and may also occur in old age

Treatment

The skin must be protected from bright light in every way possible For this purpose yellow Vaseline is useful while for women peach-coloured powder applied freely over a face-cream is more acceptable Salol 10 per cent in 75 per cent alcohol or tannic acid 10 per cent in 25 per cent alcohol is worth a trial if the high alcoholic content does not cause irritation as is also *para* aminobenzoic acid 15 per cent in Ruggles cream or a Lanette Wax SX base A sharp look out must be kept for any indication of malignancy at the least sign of which appropriate treatment should be given

CONGENITAL ANOMALIES CHIEFLY AFFECTING THE DERMIS

Soft naevi

These naevi or moles form soft tumours many of which are rich in pigment whereas others contain no more than is present in normal skin

Aetiology

A naevus results from maldevelopment of the cells which form the skin in a particular area but why this should occur remains a mystery All the different types of cell which make up the skin are at times affected so that a mole is a complicated structure with diverse clinical manifestations The one constant feature in a soft naevus is the presence of a special cell the naevus cell which forms the body of the tumour The origin of these cells is uncertain but the evidence suggests that they arise from epiblast Thus when malignant changes occur the neoplasm is a naevocarcinoma The importance of heredity is shown by the tendency in certain families to develop large numbers of pigmented naevi sometimes in particular areas

Morbid anatomy

The growths are formed mainly of masses of naevus cells which extend downward from the epidermis into the neighbouring part of the corium These cells which are sometimes present in the stratum mucosum also can make pigment and are often full of it though they may contain none at all The epidermis may be thinned or thickened and fissured

Clinical features

Soft naevi may be present at birth or only appear later especially in early adult life The colour depends on the amount of pigment present in the tumour and varies from that of ordinary flesh through deepening shades of brown to near black The surface may be smooth level with the skin and of normal texture The naevus is

affected Excessive sweating in the palms and soles is common in this disease and the affection is apt to be worse in hot weather In the more severe type, the bullae are more widely spread over the body, scarring is usual and epidermal cysts are found about the scar tissue The mucous membranes are frequently involved but rarely the conjunctivae The subcutaneous fat may be diminished Development defects of the nails teeth and other epidermal structures are occasionally present The condition is remarkably persistent, though mild cases may clear up at puberty or in old age

Diagnosis

The appearance of bullae following trauma and the hereditary and familial nature of the malady make the diagnosis evident

Treatment

The parts most frequently involved should be protected from injury as far as possible and mild antiseptic ointments applied to prevent infection when the bullae have broken

Xeroderma pigmentosa

This is a rare disease characterized by areas of pigmentation areas of atrophy telangiectasia, and warty growths in the skin Malignant changes are common

Aetiology

The actual cause is unknown but the condition may be present in several members of a family and is probably transmitted by a single recessive gene (Cockayne 1933) The exciting factor appears to be actinic rays to which the skin is exceedingly sensitive and to which it reacts in an abnormal manner

Morbid anatomy

The changes found in the skin depend upon the nature of the lesion examined and the state of its development Hyperkeratosis is found in the warty papules while the stratum mucosum is usually thin and atrophic In the corium there is some round cell infiltration and dilatation of vessels and degeneration of the fibrous and elastic tissue in the later stages Pigment is excessive both in the epidermal cells and in the superficial part of the corium

Clinical features

The disease usually begins in the first few years of life with photophobia reddening of the conjunctivae erythema of the uncovered skin and development of pigmented macules resembling freckles These signs are followed by the appearance of atrophic patches telangiectasia and warty papules Ulceration of the cornea, keratitis and ectropion may occur malignant changes in the skin are frequent the growth usually being an epithelioma of the squamous cell type with cell nests—more rarely a sarcoma The majority of lesions occur on exposed parts but they may also be found on the trunk and other covered areas The outlook is poor the great majority of patients dying before adolescence is reached Occasionally the disorder begins in adult life

If it is decided to remove the naevus this may be done by excision by electrolysis by diathermy or by freezing Whichever method is used it is wise to see the case at intervals for several months after treatment has been carried out to make sure that no regrowth has occurred especially in cases suspected of malignancy in which event only instant surgical intervention will prevent a fatal issue As a prophylactic measure it is probably wise to excise all very deeply pigmented naevi or those exceptionally exposed to irritation from trauma or friction even if causing no symptoms Naevi situated on feet and hands in the groins and in the axillae fall within this category It is believed by some that any form of treatment for naevi except wide excision entails a risk of initiating malignant changes and that this applies especially to those which are deeply pigmented The evidence for this however is not entirely satisfactory and while the possibility that treatment may cause an innocent naevus to become malignant cannot be categorically denied yet it may be said with certainty that if this occurs it does so only with extreme rarity

Excision —This is suitable for every type of naevus and is the safest treatment of all It is the only satisfactory way of removing large naevi or those suspected of becoming malignant In the latter immediate excision is required leaving a wide margin of normal tissue It is the method of choice for removal of deeply pigmented naevi Plane non pigmented naevi may b shaved off level with the skin

Electrolysis —If any hairs project they should be removed first of all by passing the needle down the hair follicle (2 milliampere current) Sometimes this alone will cause the mole to shrink sufficiently and pigmentation to disappear but if further treatment is required the substance of the mole may also be destroyed as follows the needle is inserted superficially and a current of 1–3 milliamperes is allowed to pass for about 10 seconds The needle is then withdrawn and inserted in another direction and the process repeated until the whole area to be destroyed has been covered The crust which forms should be allowed to fall off and another treatment may then be given if necessary As mentioned above some believe that this method entails a risk of encouraging malignancy especially in extremely dark naevi

Diathermy —Small naevi pigmented or unpigmented may be conveniently destroyed by fulguration A surgical current is used and a pointed applicator is held close to the mole to be treated so that a stream of sparks crosses the gap between the two causing the tissue to become shrivelled from heat within a few seconds A crust forms which separates within a week or so and then further treatment can be given if required This method has the advantage of being simple and comparatively painless and avoids any danger of causing deep destruction of tissue which might leave an ugly scar

Freezing with carbon dioxide snow —A suitably moulded stick of carbon dioxide snow is held in firm contact with the mole for 30–60 seconds The subsequent reaction is severe a large blister forms which may be opened aseptically and dressed with sterile gauze or antiseptic ointment When the inflammation has subsided a further treatment may be given if required after a period of 6 weeks or so

Multiple benign cystic epithelioma

In multiple benign cystic epithelioma (epithelioma adenoides cysticum (Brooke)) numerous small tumours develop in the skin of the face and less frequently elsewhere

then no more than a pigmented macule (naevus spilus) In other cases the surface is hairy, rough or even warty Moles generally project somewhat and may cover very wide areas (Fig 21), or be no larger than a pin s head Growth is slow and ceases altogether after a time, spontaneous disappearance is rare A very small percentage particularly of those which are deeply pigmented become malignant

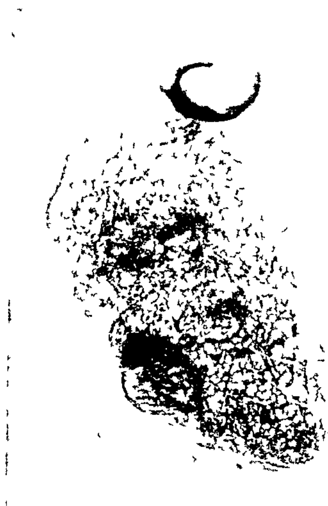


Fig 21 —Pigmented hairy naevus

later in life Such a change is suggested by a sudden increase in size darkening in colour a tendency to bleed easily or the onset of irritation These signs are especially important in middle aged and elderly persons Although moles may develop on any part the face is the site of election and it is for moles appearing in this region that advice is usually sought

Treatment

It is difficult to remove a naevus without leaving any visible trace on the skin whether as a slight scar or a depigmented macule and it is well to warn the patient of this before treatment is undertaken

the scalp cheeks neck arms and chest They are firm smooth rounded and move freely with the skin Early lesions are pale or flesh coloured while older ones tend to become pink or bluish and semi translucent from cystic changes within (Fig 22) The surface is smooth and sometimes traversed by minute vessels occasionally it is depressed in the centre The size is usually from 1 to 5 millimetres in diameter but larger tumours may be encountered The papules develop slowly and then remain stationary without showing any tendency to spontaneous involution In rare instances malignancy intervenes the growth being a basal-cell epithelioma

Diagnosis

Milia may be distinguished by their hardness whiteness small size and the ease with which they are expressed after making a small incision over their surface Molluscum contagiosum differs in showing a central depression from which sebaceous material can be extruded The resemblance to small non pigmented naevi and adenoma sebaceum may be close requiring microscopic examination of an excised papule to settle diagnosis

Treatment

The lesions may be excised or destroyed by diathermy In the latter case each papule must be treated separately and more than one application may be required It is difficult to extirpate growths which extend deeply into the dermis without leaving any scar and for this reason treatment is apt to be unsatisfactory Good results have been claimed from x ray therapy

Von Recklinghausen s disease

Von Recklinghausen s disease (molluscum fibrosum or neurofibromatosis) is an uncommon condition characterized by the presence of numerous tumours and pigmented patches in the skin tumours associated with nerves and changes in the bones

Aetiology

The cause is unknown but the influence of heredity is apparent in the number of cases which occur in successive generations of one family The disease is often associated with low mental development and other abnormalities such as vascular and pigmented naevi adenoma sebaceum and spina bifida

Morbid anatomy

The tumours consist essentially of cellular fibrous tissues of an embryonic type in which fine nerve fibrils may be distinguished here and there The histological appearances and the common finding of many nodules attached to the nerve trunks suggest that the neurofibromatous masses arise from the fibrous tissue in the nerve sheaths

Clinical features

The fibrous tumours which are the chief feature of the disease seldom appear until puberty is reached though they may do so early in life They are not confined

Aetiology

The influence of heredity is often apparent and many cases are familial Women are more often affected than men It has been suggested that the tumours result from the tardy onset of growth in embryonic hair follicles or undifferentiated epithelial cells

Morbid anatomy

There are cylindrical growths of epithelial cells in the superficial half of the dermis the spread of which from the basal cells of the epidermis or corresponding cells of the hair follicles can be clearly traced in microscopic sections The cells at



(*a*) (*b*)

Fig 22.—Showing benign epithelioma—epithelioma adenoides cysticum (Brooke) (*a*) In early life (*b*) Same case at 25 years of age

the periphery are arranged as a palisade and do not infiltrate the surrounding tissues The centres of the cellular masses often become cystic and the whole tumour is enclosed in a fibrous capsule

Clinical features

The papules usually appear at puberty or in early adult life though they may be found much earlier They are about twice as common in women as in men The early papules are very small about the size of a pin s head discrete and grouped around the eyes nose and chin Sometimes though less frequently they develop on

(Fig 23) The skin covering them is normal in colour or it may be pigmented The smaller tumours may often be made to retrace their course under digital pressure In size they differ greatly the majority being no larger than a marble though huge dependent masses are occasionally found (fibroma pendulum) A variety of the latter in which the skin hangs in folds is described as dermatolysis The tumours grow and do not ulcerate They do however sometimes become malignant When this happens the growth is usually a spindle cell sarcoma with little tendency to form metastases Carcinomatous changes have also been reported The possibility of malignant disease supervening should be remembered when considering the prognosis

The abnormal pigment in the skin shows itself as large pale brown macules oval in shape and often several inches in diameter Here and there on their surface and also occurring on normal skin may be found small deeply pigmented spots Pigmented macules may be present for many years before other signs of the disease appear and may indeed be its only manifestation They are often the first signs in children that this abnormality has been inherited

Diagnosis

This gives rise to little difficulty Multiple sarcomas grow rapidly tend to ulcerate are dark red in colour and are evidently malignant Neuromas are small tender painful few in number and very rare

Treatment

Advice is usually sought because of the inconvenience caused by a large tumour or for cosmetic reasons Excision is the only treatment of value

CONGENITAL ANOMALIES OF THE BLOOD VESSELS OF THE SKIN

Haemangioma

A naevus formed of blood vessels is called a haemangioma

Aetiology

Although vascular naevi are extremely common their cause remains unknown That heredity may be of importance is shown by the familial incidence in certain varieties

Morbid anatomy

The tumour consists chiefly of a mass of dilated and thickened capillaries many of which are newly formed Sometimes the capillaries are so distended as to form large cavities full of blood (cavernous haemangioma) In deep naevi the arterioles and venules of the skin and *hypoderm* may be involved in addition to the capillaries The superficial part of the dermis only may be affected or the process may extend through the full thickness of the skin and invade the deep tissues and mucous membranes In the subcutaneous type a fibrous capsule may be present and fat is sometimes mixed with the tumour Additional haemangiomas are occasionally found in the viscera or nervous system

The three common types of haemangiomas are port wine stain (capillary naevus) spider naevus (capillary naevus) and strawberry mark (cavernous naevus)

to the skin, but may occur in the viscera, endocrine glands and elsewhere Nodular tumours appear on the course of peripheral nerves or attached to nerves within the cranium or spinal canal where their growth may produce symptoms of pressure



Fig 23 —Neurofibromatosis Note fibromatous tumours and pigmented macules

In the bones both cystic changes and tumours may be found while scoliosis and kyphosis are frequently met with In the skin the growths are soft sessile or pedunculated and occasionally follow the course of a nerve At times they are extremely tender and may be very painful appearing to be most numerous on the trunk

improvement It this treatment is to be used the earlier it is begun the better The affected skin should be painted over with a freshly prepared solution of thorium X in alcohol containing 1 500–2 000 electrostatic units per millilitre A camel hair brush may be used for the purpose and several coats given at a sitting It is well to avoid washing the area for 4 days and no bandaging is required Nothing further should be done for at least one month so that all reaction may have time to subside A second painting may then be given and the process repeated a dozen times or so



FIG 25 —Sturge s disease Note port wine naevus most marked on right side of face and protrusion of right eyeball This boy was mentally deficient

If no paling of the skin has appeared by this time it is unlikely that thorium X will be of benefit In any case it is probably unwise to give more than 20 paintings in all owing to the possible danger of causing radio dermatitis for it must be remembered that the breakdown products of thorium X yield both *beta* and *gamma* rays

In the deep type in which no benefit is to be expected from thorium X or in those superficial ones which do not respond to this form of therapy the help of a plastic surgeon may be sought

Spider naevus

This type of naevus is met with very frequently and appears as a small red papule no larger than a pin s head with fine lines radiating from the centre like the spokes of a wheel The central elevation consists of an arterial or venous loop and the radiating lines are dilated capillaries communicating with it Pressure on the central point makes the naevus partially or entirely invisible Spider naevi are most fre quently seen on the bridge and sides of the nose on the malar region of the cheeks

Port wine stain

The colour varies from faint pink to deep purple and is apt to become darker in cold weather or as the result of crying or coughing or of anything that reduces the oxygen content of the blood In the superficial type it may be made to disappear under pressure with a glass slide The surface is generally smooth and level with the normal skin, though it may be slightly raised and roughened by soft vascular outgrowths fibrous nodules or wart like projections

The naevus may be very small, or extend widely with an irregular border which is often lighter in colour than the centre Port wine stains may occur on any part of the body but are most frequently found on the neck or on the face where they often correspond roughly in distribution to the area supplied by the fifth nerve



Fig 24 —Port wine stain—capillary naevus

(Fig 24) A favourite site in infants is the nape of the neck where a faint pink stain is commonly seen They appear at birth or soon afterwards increase in size as the child grows and usually become stationary at puberty Occasionally they disappear spontaneously Very rarely a port wine naevus of the face is accompanied by vascular changes on the same side in the eye and meninges by atrophy of the brain and by exophthalmos (Sturge s disease) (Fig 25) Amentia and hemiplegia may then be present

Treatment —Treatment of this type of naevus is unfortunately not satisfactory Many different methods have been tried with little success The difficulty is to destroy the growth without injuring the skin and leaving an ugly scar

In the superficial pale type painting the coloured area with thorium X a radio active compound whose main energy is derived from *alpha* particles often produces

30 seconds a slight but steady pressure being maintained The fingers of the operator are protected by a thick layer of cotton wool This freezing causes a sharp reaction and a blister is likely to form which is finally replaced by a crust No further freezing should be undertaken for at least six weeks a further application of carbon dioxide snow may then be made if required To avoid giving needless



FIG 26 —Strawberry mark—cavernous naevus

pain as few exposures as possible should be made repeated short freezings of a few seconds duration are not recommended

Some skins are abnormally sensitive however and an exposure of 30 seconds or longer may produce an undesirably great reaction with consequent risk of scarring To avert this danger an application lasting only 5 or 10 seconds may be made on the first occasion to be followed if no untoward reaction results by a full exposure later on

Excision is specially suitable for deep cavernous naevi and parts of the skin which are normally covered

Sclerosing solutions such as Dilute Hydrochloric Acid (*B P*) or tincture of iodine may be injected into the tumour Very good results are obtained in the small blue

and above the eyebrows Common at all times of life they are seen perhaps in greatest numbers in adolescence Having reached a certain size they cease to grow, but seldom show any inclination to regress

Treatment —The best treatment is by electrolysis A fine pointed iridio platinum needle attached to the negative pole of the battery, is inserted into the central elevation of the naevus the circuit being completed by connecting the positive pole to the patient s skin A current of 1–2 milliamperes is then made to pass for some 30–40 seconds by which time blanching is usually visible around the needle point The needle is then withdrawn and the skin painted with collodion In nervous children it is advisable in my opinion to give a general anaesthetic otherwise there is a risk that a sudden movement may eject the needle before the naevus is destroyed and a further operation may be required

Strawberry marks

These are common in children in the first few years of life They appear at birth or soon afterwards as bright red soft, compressible swellings in the skin with a faintly lobulated and shining surface In those that are deeply placed however, only a violet coloured elevation is visible capped by the usual crimson strawberry mark if the naevus reaches the surface

Pressure with a glass slide causes the colour almost to disappear in many, but not in all Crying or coughing makes the tumour more prominent and the colour more intense

Although they may develop anywhere they are more common on the face scalp arms and upper part of the trunk In shape and size they differ greatly the variety usually encountered being roughly circular and about half an inch in diameter (Fig 26)

In the great majority of cases they grow rapidly during the first year or so then cease to increase in size and disappear spontaneously before the end of the fifth year without leaving any trace The rare naevus which persists does not grow rapidly and can be detected by this feature (Lister 1938)

Treatment —It must always be remembered that most of these naevi disappear spontaneously so that any treatment which entails the risk of leaving a scar or an area of reduced vitality must be very carefully considered before it is advised It is probably wise to recommend non interference in all cases if the co operation of the mother can be secured This is especially important if the scalp is affected since too energetic treatment may lead to a bald patch It is difficult however to persuade the mother to forgo the satisfaction of treatment and to adopt a policy of merely watching and waiting

Should treatment become necessary however from failure of the naevus to disappear in the customary manner or should it be considered advisable for other reasons one of the following methods may be used

Freezing with carbon dioxide snow is suitable for the superficial type but should not be used when the naevus extends deeply into the subcutaneous tissues A stick of carbon dioxide snow moulded to the correct size and shaped if necessary by gentle parings with a pocket knife is held in contact with the growth for about

distinguished from vitiligo by having no pigmented border by failure to redden normally on being rubbed and by becoming indistinguishable from the surrounding skin under pressure with a glass slide Further the affected skin becomes pigmented

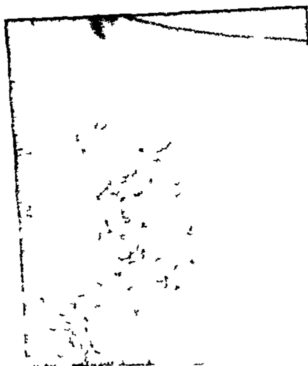


FIG 28 —Naevus anaemicus

after exposure to ultra violet light natural or artificial which does not occur in vitiligo

CONGENITAL ANOMALIES OF THE LYMPHATIC VESSELS

Lymphangiomas

Naevi formed of lymphatic vessels are rare and are described as lymphangiomas

Morbid anatomy

The naevi consist of wide lymph spaces and dilated lymphatics some of which are newly made lying superficially within the corium The only one which need be considered here is the lymphangioma circumscriptum It usually appears early in life as a group of closely set vesicles pale yellow in colour which has been compared to frog s spawn The vesicles vary in size from about $\frac{1}{16}$ to $\frac{1}{4}$ of an inch have thick transparent walls and a surface which is generally smooth but may be roughened by vascular or warty outgrowths (Fig 29) When pricked the vesicles exude clear fluid These naevi grow slowly become stationary and are remarkably

naevi which develop on the lips by injecting one minim of either of the above Care must be taken to avoid infiltrating the surrounding tissues A disadvantage of this method for treating larger naevi is the number of injections required

Radiotherapy by exposure to x rays or radium gives excellent results Such treatment should be given early before other methods have been tried and should only be carried out by those who are familiar with the technique and the risks involved

Familial telangiectasia

This is a rare vascular disorder which is transmitted by either parent probably as a simple dominant and manifests itself usually in persons of middle age by repeated attacks of epistaxis and the development of angiomas and telangiectases The lesions though commonest in the skin of the face (*see* Fig 27) and hands and in



Fig 27—Familial telangiectasia Note telangiectases on mucous membrane of lip

the nasopharyngeal mucous membrane may occur in any organ of the body Haemorrhages especially from mucous membranes may be severe difficult to control and lead to secondary anaemia or even death

Treatment

Small telangiectatic lesions should be dealt with by electrolysis as described for spider naevi Rutin is helpful in preventing haemorrhages and reducing capillary fragility if present It may be given in doses of 20–40 milligrams 3 times daily by mouth Should secondary anaemia develop it must be treated appropriately

Naevus anaemicus

This rare condition shows itself as a pale area surrounded by normal skin and it is often associated with telangiectatic and other naevi (Fig 28) It is thought to be due to constriction or absence of some of the cutaneous vessels and may be

Clinical features

The papules may be present at birth appear during childhood, or later They are discrete firm and dome shaped and are most numerous on the nose and the adjacent parts of the cheeks and chin though they may be found elsewhere (Fig 30) The surface is generally smooth but may be rough or even warty and is frequently



Fig 30 —Adenoma sebaceum This boy was mentally deficient and suffered from epileptiform convulsions (epiloia)

covered with a network of capillaries giving the papules a bright red colour Otherwise they are flesh coloured or have a waxy yellow tinge They increase slowly in number until puberty is reached after which fresh lesions seldom appear very occasionally retrogression takes place

Other naevoid anomalies of the skin are often seen such as pigmented macules and haemangiomas Sometimes adenoma sebaceum is associated with areas of sclerosis in the brain which may cause convulsions or paresis and with tumours in the heart kidneys and other organs (epiloia) Few of these cases survive beyond the third decade of life

Diagnosis

The development of the lesions early in life their characteristic distribution on the nose and central third of the face the presence of telangiectasia and other

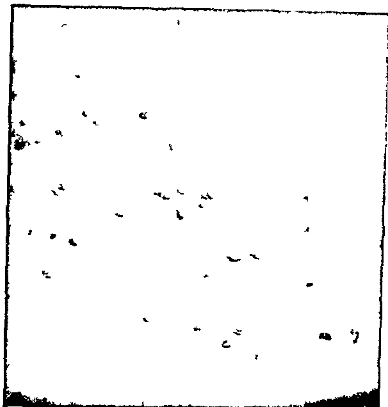


FIG 29 —Lymphangioma circumscriptum

persistent The commonest sites are the shoulder region, the upper part of the *trunk and the inside of the mouth*

Treatment

Lymphangiomas may be excised, or destroyed by diathermy radium or carbon dioxide snow

CONGENITAL ANOMALIES CHIEFLY AFFECTING THE SEBACEOUS GLANDS

Adenoma sebaceum

The most striking feature of this rare disease is a large number of reddish yellow papules on the face

Aetiology

The defect in development responsible for this malady may produce lesions in the brain the nervous system and the viscera as well as in the skin showing that the cause whatever it may be is widely spread Many cases are familial and the disease may be *inherited*

Morbid anatomy

The papules consist of hyperplastic sebaceous glands with numbers of dilated capillaries and blood spaces *about them lying in a network of connective tissue* fibres

Aetiology

The condition may be both familial and hereditary Cockayne (1933) considers that it is probably due to a single recessive gene allelomorphic with a dominant gene

Morbid anatomy

The pigment normally present in the skin is absent and it may also be absent from the hair and eyes

Clinical features

Albinism may be partial or complete When partial there are patches of white skin or hair In the complete form the entire skin hair and eyes are involved The



FIG 31 —Complete albinism in woman of 35 years of age Note photophobia white hair white eyebrows and eyelashes

affected skin is white or pale pink in colour but otherwise normal The hair may be pure white or a very pale yellow (Fig 31) The iris is pink and the pupil looks red Photophobia and nystagmus are common The lack of pigment makes the skin sensitive to sunlight so that attacks of solar dermatitis are of frequent occurrence Occasionally it is associated with poor mental development and physical defects

Diagnosis

Partial albinism may be distinguished from vitiligo by being congenital frequently unilateral and remaining unaltered through life Complete albinism is unmistakable

naevoid defects and the frequent association with low intelligence will usually make the diagnosis clear Microscopic examination of a papule may be required to decide the diagnosis in a difficult case

Treatment

The papules may be excised or destroyed by cauterization or electrolysis but the results are not very satisfactory

CONGENITAL ANOMALIES CHIEFLY AFFECTING THE SWEAT GLANDS

Syringocystoma

Syringocystoma (syringoma or hidradenoma) is a naevoid condition associated *with the sweat glands in which numerous small papules develop on the face and* trunk

Aetiology

Beyond the fact that heredity plays a part and that the growths appear to be true naevi, nothing is known of the causation

Morbid anatomy

The tumours consist of numerous cystic bodies resembling sweat ducts in the upper third of the corium

Clinical features

Small discrete slightly elevated papules, flesh coloured or yellow and sometimes tinged with pink, appear on the face and on the upper part of the trunk They are seldom larger than a split pea are soft and have a smooth surface and are most frequently seen in young women Having reached their full size they cease to grow and persist indefinitely without showing any tendency to become malignant

Diagnosis

Syringocystoma must be separated from benign cystic epithelioma The softness of the lesions in the former and their distribution will usually suggest the correct diagnosis but the final distinction is made by histological examination

Treatment

Individual tumours may be excised or destroyed by electrolysis or cauterization X ray therapy sometimes proves helpful

CONGENITAL ANOMALIES OF PIGMENTATION

The pigment of the skin may be absent as *in albinism* or *in excess as in plane* pigmented macules and mongolian blue spots

Albinism

Albinism is congenital absence of pigment in the skin hair and eyes

Morbid anatomy

Spindle shaped cells which contain pigment are found deep in the corium These mesodermal cells (melanoblasts) can make pigment themselves The blue colour of the spot is caused by the pigment being seen through the intervening skin

Clinical features

One or more dark blue spots are seen at birth on the skin of the sacral region of the buttocks or less commonly elsewhere The spots may be no larger than a pin s head or they may cover several inches They are not elevated above the general level of the skin cause no symptoms and their surface is of normal texture They usually disappear during the third or fourth year of life

Diagnosis

The appearance and course of the lesion suggest the diagnosis which may be confirmed by histological examination

Treatment

Treatment is seldom required Should a lesion persist surgical excision followed by skin grafting may be required

Urticaria pigmentosa

In this rare condition urticaria pigmentosa (xanthelasmoidea) there are pigmented macules nodules and sometimes bullae in the skin A characteristic feature is that friction produces an urticarial response in the lesions

Aetiology

The disease usually appears in infancy and is commoner in males than in females The cause is unknown but it has been reported in sibs and this family incidence suggests that heredity is of importance It is uncertain whether the cases occurring in adults are of the same nature as those found in infancy

Morbid anatomy

Mast cells are found in abnormally great numb rs in the superficial part of the corium largely about the blood vessels and there is an increase of pigment in the basal layers of the stratum mucosum and neighbouring portions of the dermis (Fig 32) In the type occurring in adults the mast cells are few and scattered throughout the whole thickness of the corium or may be altogether absent at times

Clinical features

The disease usually begins in infancy though it may appear later in life The eruption consists of urticaria like papules macules or nodules and occasionally bullae which either cover the nodules or form independently The urticarial lesions tend to come out in crops and are ultimately replaced by macules or nodules The macules are merely stains in the skin of varying shades of brown The nodules are generally but not always discrete are reddish brown or yellow in colour round or oval in shape about $\frac{1}{4}$–1 inch in their longest diameter soft in consistence raised from the

Treatment

The skin should be protected from the effect of strong sunlight by ointments such as yellow Vaseline *para* aminobenzoic acid 15 per cent in Lanette Wax SX by free application of powder preferably of a dark shade over face cream or by lotions such as 10 per cent Salol in 75 per cent alcohol or 10 per cent tannic acid in 25 per cent alcohol Dark glasses are comforting to the eyes

Plane pigmented macules

In this disorder brown stains of widely differing dimensions are found on the skin

Aetiology

The cause is generally unknown but in a few instances the pigmented patches have been followed by the development of molluscum fibrosum

Morbid anatomy

The pigment in the skin is in its normal situation that is in the basal and neighbouring cells of the stratum mucosum and in special pigment bearing cells called chromatophores in the upper part of the dermis

Clinical features

The macules which are present at birth or appear later vary in size from that of a pin s head to large areas covering several inches The colour is light to dark brown The surface of the skin is unaltered and once present there is little growth The macules are to be seen on the trunk and elsewhere and cause no symptoms occasionally they are a forerunner of von Recklinghausen s disease

Diagnosis

Freckles are visible most frequently on those parts exposed to the light are very numerous and tend to disappear in winter Plane pigmented naevi can sometimes only be distinguished by histological examination

Treatment

Small lesions may be dealt with satisfactorily by diathermic fulguration or by freezing with carbon dioxide snow as described for pigmented naevi Large macules are best excised Although a scar results it consists of firm fibrous tissue which is preferable to the atrophic skin that may follow freezing or radiotherapy

Mongolian spots

This is a congenital condition in which there are one or more dark blue areas in the skin most frequently in the lower spinal region

Aetiology

The spots are more common in mongolian infants and in the dark races than in whites Similar pigmented patches are present in apes and other animals and traces are said to be found in all white infants if adequate search is made suggesting the persistence of a primitive condition

surface of the skin and have a smooth or slightly roughened surface Macules or nodules may predominate in any given case but commonly a mixture is found The lesions may be few or very numerous especially on the face neck trunk and upper part of the limbs (Fig 33) Factitious urticaria is often associated with urticaria pigmentosa and brisk friction will nearly always cause a macule or nodule to respond by becoming turgid and obviously urticarial The lesions persist for many years but may disappear at puberty in the infantile type leaving either no trace or a slightly atrophic scar When the disease begins in adult life it is extremely constant Enlargement of the lymphatic glands has been reported in a number of cases Itching may be present though subjective symptoms are often remarkably slight

Diagnosis

In the infantile type the affection may be distinguished from papular urticaria by the persistence of the lesions by the pigmentation and the histology Xanthomas are yellow harder and the histology is distinct The adult form may be confused with secondary syphilitic eruptions but the absence of other signs of the latter disease negative reactions in the serum and the histological picture will differentiate the two

Treatment

If irritation is troublesome soothing lotions should be applied as in ordinary urticaria a simple example is calamine lotion containing 10 minims Liquor Picis Carbonis (*B P*) to the ounce The antihistamine compounds are also worth a trial and seem to have reduced the irritation and the number of papules appearing in a case under observation

CONGENITAL ECTODERMAL DEFECTS

In this group are included many conditions affecting the appendages of the skin as well as *the skin itself* Only a few examples are mentioned here in view of the rarity

Ectodermal dysplasia is characterized by poor development generally deficient teeth scanty hair chronic rhinitis and absence of sweat glands

Hair may be partially or entirely absent or there may be a local or general overgrowth

The nails and teeth may be absent or defective or deformed in various ways Sinuses and cysts may result from the failure of ducts and clefts to close properly

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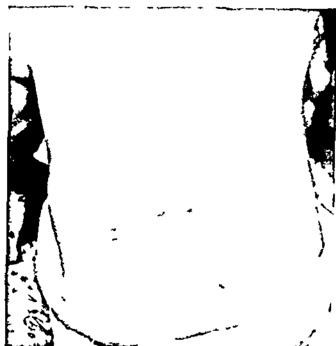


FIG. 32.—Urticaria pigmentosa in a baby. Histological examination showed mast cells in large *numbers*.

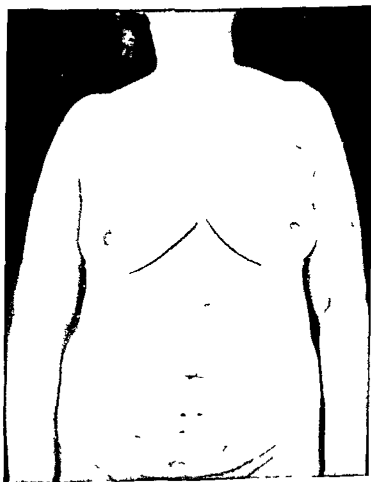


FIG. 33.—Urticaria pigmentosa, adult type.

cauliflower appearance of a virus wart The colour deepens and they can look almost black They tend to grow in size and may attain a diameter of about 2 centimetres but are usually fairly flat being seldom more than 0 5 centimetre in height

They always maintain a superficial appearance of having been applied on the skin and indeed can be easily scraped off leaving a flat oozing velvety surface



FIG 34 —Seborrhoeic warts The bigger ones looked very black The smaller ones had the dirty greyish look typical of the condition

Some of the big lesions on points of friction may become irritated and secondarily infected Malignant change has been recorded very rarely

When developed they are usually symptomless It is quite common however to find intense pruritus associated with their appearance on the trunk though whether the warts cause the irritation or simply follow it does not appear at all certain

Pathology

The histological picture is definite Cysts are formed in the epidermis by epithelial invagination There are a few mitotic figures and very little inflammatory reaction is present in the cutis

CHAPTER 5

BENIGN AND MALIGNANT NEW GROWTHS

HUGH GORDON

BENIGN NEW GROWTHS

BENIGN new growths arise either from the epidermis or the corium or from structures immediately subjacent to the corium

Callosities and corns

Callosities and corns are thickenings of the stratum corium in response to pressure, differing only in degree

Corns are circumscribed and shaped like an inverted pyramid with a small yellowish apex They occur on the toes and soles of the feet and are due to pressure between a bony point and the shoe They are usually painful

Callosities are wider without a central core and are due to more prolonged or widely applied pressure They occur on the soles and palms and are usually painless

Differential diagnosis between a corn on the sole of the foot and a plantar wart is often difficult The wart widens on being shaved down and the bleeding points of the capillary vessels appear A corn narrows to the apex and is bloodless though occasionally tiny haemorrhages occur in corns giving rise to a false diagnosis Such haemorrhages are shaved off as one goes deeper whilst in a wart they bleed more

Treatment

Palliative methods consist in relieving pressure and using salicylic acid as a paint or ointment for periods of 10 days or a fortnight

More radical relief can be obtained by surgery but if the pressure continues the corn will re form The little toe is often the site of a painful and intractable corn, which is successfully treated by amputation X ray therapy though advised by many authorities seems to be slightly hazardous if used in big doses and is ineffective in small doses

Senile warts

These are often known as seborrhoeic warts on account of their greasy scale There appears to be little reason for thus identifying them with the seborrhoeic state They are usually a degenerative change of old age being commonest from the age of 60 years and onward though occasionally they appear much earlier They are excessively common occurring usually on the trunk but may also appear on the face

They start as slightly yellowish nummular lesions which have a definitely super ficial appearance Later they become warty and crusted though lacking the

difficulty detached leaving a superficial bleeding ulceration which appears to go into the skin In the course of time some thickening and inflammation take place at the base of the crust which may however remain stationary for years In a high percentage of lesions these symptoms gradually increase and a definite epithelioma is formed The change is usually gradual and all stages are encountered exact diagnosis being frequently impossible without histological examination

Histology

In lesions still non malignant the changes seen are mainly acanthosis and dyskeratosis with round-cell infiltration in the corium

Keloid

This is a common new growth of distinctive appearance occurring usually on newly formed scar tissue which does not shrink and remain white but slowly thickens and becomes pinkish and later red It often extends beyond the original site of the scar throwing out claw like processes hence the name The lesion is firm to the touch with a consistency like that of hard rubber The surface of the skin is smooth telangiectases are commonly present

Sites of the body specially predisposed to keloid formation are the face and above all the sternal region In this latter region a keloid sometimes appears without any history of antecedent trauma Such keloids are apt to have a rather curious whip lash appearance often extending longitudinally across the chest

Pathology

There is a dense connective tissue growth composed of fusiform cells and connective tissue fibres Elastic tissue is diminished In old lesions the epidermis is thinned with atrophy of the skin appendages

Aetiology

The aetiology is essentially unknown A tuberculous diathesis put forward by the French school is unproven and unlikely Keloids are particularly apt to follow burns of all sorts and to occur on surgical incisions on which traction is present but their appearance is mainly a personal peculiarity of the skin and is not dependent on any known humoral factors

Spontaneous resolution is not at all uncommon particularly in operation scars These may thicken giving rise to the suspicion of keloid formation and then regress completely leaving a white pliable scar of much greater width however than if healing had taken place by first intention On the other hand a steady but gradual increase in size is more usual till a height of not more than about 1 centimetre is reached The lesion then becomes steadily harder and rather less red

Subjective sensations are usually slight though quite considerable irritation is often complained of and sometimes tenderness is present Keloids over joints may cause disability as a result of contractures (*see* Figs 36 and 37)

Treatment

The most effective method is undoubtedly irradiation although simple pressure with plaster freezing with carbon dioxide snow and ultra violet light by means of the Kromayer lamp have been quoted as producing cures

Treatment

This is usually desired for cosmetic reasons except in ulcerated large warts which may have become secondarily infected Treatment has sometimes seemed to alleviate the associated pruritus but the effect may have been psychological They are only slightly radio sensitive, but can easily be destroyed by cautery diathermy or carbon dioxide snow Since the chief difficulty encountered is their multiplicity



Fig 35 —A close up view of seborrhoeic warts These were light brown in colour

carbon dioxide snow and acetone are especially valuable in the treatment of early lesions (*see* Figs 34 and 35)

Senile keratosis

This is a warty lesion of irregular shape occurring in old or weather exposed skin (the so called sailor s skin) It is quite common in middle age in fair haired subjects who have lived many years in the tropics and also it follows radio dermatitis Chief sites as might be expected are the face and the back of the hand though it can infrequently be found on the covered areas of the body The appearance is distinctive in most instances It presents an irregular adherent crust which is with

pedunculated masses The commonest size is about that of a split pea They are derived from the interstitial tissue of the peripheral nerves and are symptomless

A deeper type of neurofibroma occurs as nodules appearing along the course of the peripheral nerves these are more apt to recur after removal and occasionally give rise to some pain

Multiple neurofibromatosis (von Recklinghausen s disease)

This is a congenital condition frequently of familial origin and is associated rarely with mental deficiency and other nervous lesions

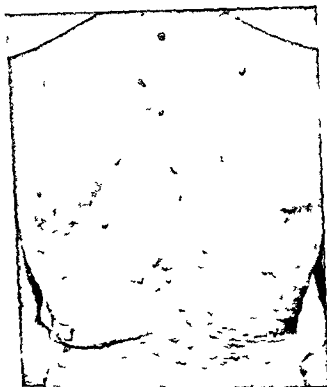


FIG 38 —A mild case of multiple neurofibromatosis

Three types of skin lesions are found (1) brown flat pigmented spots (2) sessile neurofibromas which are often capable of being pressed into the skin through a palpable gap in the deep fascia and (3) large pedunculated tumours

Many very mild types of the disease (so called formes frustes) probably exist which do not differ much from the few scattered neurofibromas found in normal patients In the fully developed cases all three types of lesions are present in profusion They sometimes give rise to pain and occasionally ulcerate Complete excision of any given troublesome lesion is the only treatment and is effective

In all cases the sooner treatment is started the more likely it is to be successful Old hard fibrous keloids become progressively more radio resistant Surgical excision satisfactorily removes the keloid scar but inevitably a keloid will form on the new incision If this is treated prophylactically, however, as soon after the operation as is practicable and preferably before the stitches are taken out the keloid formation can be usually prevented In small keloids if the skin can be satis factorily brought together, this method is useful and in old keloids may be essen tial in order to get a good result, for it must be remembered that the best that can



Fig 36 —Keloid occurring on the scars of herpes zoster



Fig 37 —Keloid of a burn on the elbow

be obtained by radiotherapy is that the hard raised pink keloid becomes flat and comparatively soft and white It will still remain obviously a scar The best results in radiotherapy are obtained by comparatively high doses given in only two or at most three treatments Long continued treatment must be avoided as the epider mis overlying the keloid is apt naturally to be thin and is even more subject to a radio necrosis than is normal epidermis

Neurofibroma

Simple form of this benign growth are fairly common and occur as soft flesh coloured pedunculated lesions found anywhere on the body They vary from pin head size hen they are indistinguishable from cutaneous tags of the neck to large

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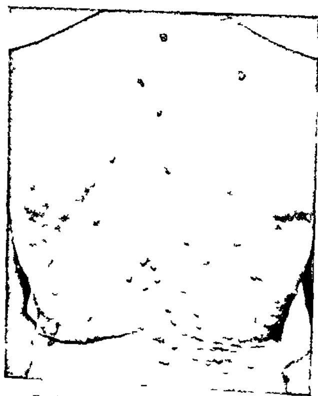


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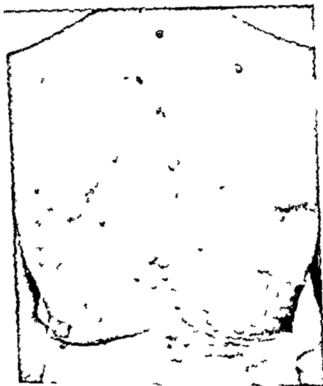


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symptoms but advice is frequently sought on cosmetic grounds They are very common

Aetiology

They are commoner at or after the menopause which ha suggested a hormonic cause They can however occur in men being usually found round the axillae and also in girls and young women (Fig 39)

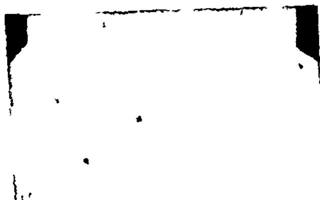


Fig 39—Cutaneous tags of skin in front of the neck in a woman aged 38 years

Treatment

They do not disappear spontaneously The simplest method of destruction is by a autery point or by diathermy The use of chemical caustics is greatly to be deplored in view of the risk of scarring

Myomas

These are very rare They present as small colourless circumscribed tumours usually up to 0 25 centimetre in diameter and frequently multiple occurring mainly on the face and upper extremities Occasionally they cause pain

They cannot be distinguished with any certainty except by biopsy when the presence of smooth muscle fibre can be identified

Lipomas

These are soft fatty tumours occurring subcutaneously anywhere on the skin they are commonest on the trunk The skin surface is unaltered but is sometimes dimpled They increase to a variable size and then remain stationary *Treatment* is by surgical removal

Glomus tumour

This is an interesting little tumour of uncommon frequence formed from an arteriovenous anastomosis It occurs as a small bluish very tender tumour usually under the nail or in the pulp of the finger tip where it may be just visible under the skin More rarely it becom s elevated

although recurrence can sometimes occur and very occasionally malignant change supervenes (*see* Fig 38)

Subungual exostosis

This most frequently occurs on the terminal phalanx of the big toe, but is occasionally found on other toes and sometimes on the hand The condition is not uncommon

It starts as a cartilaginous outgrowth which later becomes ossified and attached to the terminal phalanx *A hard little tumour is produced which is usually apparent* at the edge of the nail and is very often painful on pressure The surface is irregular and crusted It frequently simulates very closely a subungual wart but is much less freely movable and has not the same degree of surrounding hyperkeratosis in the skin *Even so it is quite frequently impossible to distinguish with certainty between* them without an x ray examination which usually demonstrates the presence of the exostosis

Treatment is by complete surgical excision Simple cauterization or diathermy is apt to be followed by recurrence

Chondrodermatitis nodularis chronica helicis

This lesion is a small painful nodule situated on the rim of the ear nearly at the tip It starts as a small protuberance which soon becomes painful, over a period of years this becomes a papule with a small central crust It is found at all ages but is commoner in middle and later life It has been suggested that pressure is a factor in *causation The pain on pressure is usually quite severe the patient* is unable to sleep on that side

The differential diagnosis between an early epithelioma or a rodent ulcer presents great difficulties and can often only be established with certainty by removal and biopsy

Treatment

The lesions are completely radio resistant and must be removed or destroyed by surgical measures Cauterization and diathermy are not very successful recurrences being fairly common Undoubtedly the best procedure is complete surgical removal which allows for a biopsy as a precautionary measure Andrews (1946) reports the common finding of a projecting spur of cartilage at the place of the lesion which he considers *may have aetiological importance It is in any case certain* that to prevent recurrence a small wedge of cartilage must be surgically removed together with the little tumour

Cutaneous tags of the neck

These are small pedunculated tags of normal looking skin occurring usually on the necks of women They are often very numerous and are visible in all stages of development starting as small raised papules which elongate into little tags probably stimulated by repeated but *very slight friction They are occasionally found* on the cheeks and forehead but in this site remain fairly flat They cause no

The squamous-cell carcinoma commonly termed epithelioma is derived from the prickle-cell layer and is characterized pathologically by the formation of keratinized cell nests It is comparatively quick growing a matter of months being a common history

The basal-cell carcinoma commonly called rodent ulcer is formed by the basal cells of the Malpighian layer and is very slow growing often taking up to 10 years before obtaining any size or giving any trouble

Both types can occur anywhere on the skin but there are differences in their antecedent history and subsequent course Epithelioma whilst quite frequently occurring *de novo* on the face is more commonly a lesion which follows various forms of trauma such as burns of all sorts especially x ray burns or exposure to tar (pitch warts) and which supervenes on senile keratosis A frequent predisposing cause of both types is repeated exposure to bright sunlight Several



Fig 40 —A child aged 5 years (freckled unduly at age of 1 year) with epithelioma on the left side of the upper lip The skin is covered with pigmentation and there is some keratosis

authorities have noted greatly increased incidence of rodent ulcer in Australia *in fair skinned subjects*

In the condition known as xerodermia pigmentosa there appears to be an inborn total lack of resistance to *actinic rays and* epitheliomas develop from the early age of 5 or 6 years (Fig 40)

Both lesions are locally destructive of all structures which they invade including cartilage and bone Rodent ulcers do *not* occur on the mucous membrane except by adjacent invasion whilst epitheliomas commonly arise on the muco-cutaneous junctures and the mucous membranes

Metastases occur only in epitheliomas being an early development in lesions of the mucous membranes but often a very late *one* in lesions of the skin particularly

The patient comes for advice on account of the very severe pain experienced on pressure, usually the pain is strictly localized to one point

In one case which was seen recently the tumour occurred on the sole of the foot another supposed case proved to be a small foreign bodied tumour surrounding a needle fragment which did not show on x ray examination Treatment is by careful surgical dissection

Turban tumours

These are limited to the scalp and often a familial history is obtained They resemble small tomatoes and are frequently nodular appearing in early adult life *and increasing in size*

They are of epithelial origin with no tendency to ulceration Treatment is by surgical removal

Peri-articular synovial cyst

This little tumour occurs on the dorsal surface of distal interphalangeal joints its site being practically always the terminal joint It presents as a rounded painless swelling about the size of a split pea covered with normal epidermis These cysts sometimes break and discharge a glairy fluid

Aetiology

Freudenthal (1947) demonstrated that they are a true synovial formation

The tumour consists of ectopic true synovial tissue The connective tissue becomes rarefied in a small area which grows larger and forms a cyst with or without a *scanty lining and filled with a mucoid fluid These cysts are formed in exactly the* same way as the synovial cavities during embryonic life They are most likely a developmental anomaly which manifests itself in later life either spontaneously or *after provocation*

A history of antecedent trauma is sometimes obtained the trauma is usually in the nature of a deep puncture for example by a rose thorn or as in one case a dentist puncturing his finger *with his own drill*

Treatment

Usually treatment is required only from the cosmetic point of view since these cysts do not cause any pain They can be successfully treated by surgical excision or thorough cauterization under local anaesthesia If either process is incomplete *there may be recurrence*

MALIGNANT NEW GROWTHS

Malignant new growths of the skin are either primary derived from the epithelial cells of the epidermis or its glandular or pilar structures or secondary being metastatic deposits from new growths of the internal viscera

Primary new growths are either carcinomas or very rarely sarcomas The carcinomas are of two types—squamous cell and basal cell—and both are extremely *common*

examination and is quite frequently proved only by biopsy or by cutting serial sections after total excision

Incidence and site

Rodent ulcers occur mainly from the age of 50 years onward and are slightly commoner in males Cases occurring under the age of 30 years in both sexes are not very infrequent and are usually found in fair haired blue eyed types

The age incidence of epithelioma is the same though it occurs more frequently than rodent ulcer in subjects about the age of 40 years and also in advanced old age

Rodent ulcer has a marked tendency to occur on the central regions of the face in a rough quadrilateral bounded above by a line running across the eyebrows to the tip of the ear and below by a line from the angles of the mouth to the pinna It can frequently occur on the neck and scalp (Fig 42)

Epithelioma while it may occur on any of the above sites is the lesion commonly found on the back of the hands (Fig 41) and extremities and round the genitalia

Rodent ulcer practically only occurs on the body in a multiple superficial type which is described below



Fig 44 —Epithelioma occurring in front of the ear



Fig 45 —Epithelioma on the mucous membrane of the cheek The lesion is of 3 months duration and there is glandular involvement

Clinical features

Epithelioma

Two main types exist—the warty and the ulcerative

In its simplest form the warty type can resemble quite closely a common or virus wart On close examination the little tumour is seen to be composed of two

of the face The draining glands are always the first site of such metastatic involvement

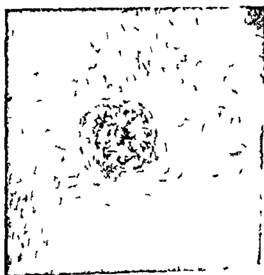
It is quite common for a rodent ulcer to change in type and to become a mixed baso squamous cell tumour It then takes on some of the clinical characteristics of an epithelioma and metastasizes This change may be suspected only on clinical



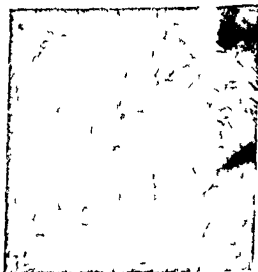
Fig 41 —Epithelioma of the back of the hand which is a common site In this case the lesion is of 3 months duration



Fig 42 —Epithelioma of 2 months duration The enfolding edge is clearly shown



(*a*)



(*b*)

Fig 43 —Epithelioma of 5 months duration (*a*) showing commencing ulceration there is no glandular involvement (*b*) 3 months later Treatment was by x ray irradiation the reaction from which *is still seen*

false hopes which may last over a period of frequently many years This ulcerative change starting in the centre of the lesion is shown in Fig 47

The combination of tumour formation scarring and ulceration produces a variety of clinical pictures these being described by various terms such as button like cicatricial terebrant and crateriform which are of some descriptive value

In the so-called button type the tumour element is predominant and is in fact made up entirely of a hard rolled edge with a central umbilication Ulceration

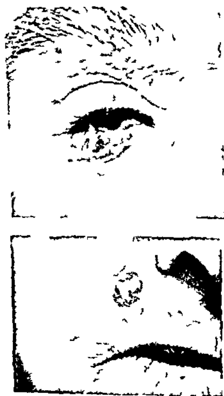


Fig 47 —Very common clinical appearance of small rodent ulcer with a 2 years history

Fig 48 – A rodent ulcer of the button type



Fig 49 –A rodent ulcer of the button type showing a well marked central depression

occurs sooner or later in the centre of the lesion Occasionally instead cystic degeneration occurs Rather rarely this cystic tendency entirely predominates and the lesion has the appearance of a single very chronic cyst which discharges a glairy fluid The hard rolled edge is not apparent but can always be felt Typical examples of the button type are shown in Figs 48 and 49 and it will be noted that the difference in the appearance of this lesion and of an epithelioma is not very great In fact it is sometimes impossible to distinguish between them without

elements, an edge of normal looking skin frequently overrun by telangiectasis enfolding a keratinized central core which may or may not be crusted There is usually some degree of surrounding inflammatory reaction The lesion if picked up, is freely movable but gives a feeling of hardness and toughness (*see* Figs 41 and 42) Such tumours seldom grow more than 2 centimetres in diameter and 1 centimetre in height before ulceration supervenes This change is shown starting in Fig 43

In the ulcerative type of lesion the edge is hard inverted and irregular, and some degree of fixation in large lesions is frequent The base is papillomatous and filled with crusts and pus bleeding is *common (see Figs 44 and 45)*

Rodent ulcer

The striking clinical feature of the rodent ulcer is a hard rolled edge of cartilaginous consistency and of a pearly white colour It is practically always possible to detect this edge if it is carefully looked for, it may, however, be obscured by crusting or may involute in parts of the lesion leaving scarring In early or superficial lesions this edge may comprise the only clinical signs of a rodent ulcer It can sometimes be *more easily felt than seen* by stroking the lesion with the finger tip the hardness of the edge can be evaluated by the finger nail It shows up better if



Fig 46 —A rodent ulcer below right eye of (*a*) 6 months duration (*b*) showing edge of rodent ulcer made clear by traction

inspected by tangential *light Fig 46 illustrates such a lesion which is* hardly apparent until traction is made on the lower lid the edge being then clearly apparent

This superficial and early type of lesion composed of normal looking skin is quite frequently discovered in routine examination the patient being unaware of it Subjective sensations are often nil though occasionally the patient is aware of some niggling discomfort More commonly what brings him or her to the doctor is *the* comment of friends or relations or commencing scabbing The lesion has a tendency to improve and to appear to heal with or without scarring this gives rise to



FIG 52—A curious type of rodent ulcer extending down the neck fold Scarring is seen at 10 o clock



FIG 53—The same case as in Fig 52 1 month after x ray treatment showing the full extent of the lesion which is the darker area the lighter being the surrounding x ray reaction still remaining

biopsy In rodent ulcer the central core or scab is not so firmly adherent and can be more easily picked off The cartilaginous character of the edge is distinctive

In the cicatricial type scarring is often a striking feature the lesion tending to spread over wide areas usually on the temples or jaw, with little tendency to ulcerate The edge is apparent at some point of the periphery and again if looked at carefully by tangential light islands of the same cartilaginous substance can be



Fig 50 —*A cicatricial* rodent ulcer in which scarring and islands are well shown In this case there is a 5 years history



Fig 51 —A cicatricial rodent ulcer with an 8 years history no treatment has been given The edge at the bottom of the *lesion is* prominent There are many islands of superficial ulceration with destruction of the ear

seen very often outside the main lesion Small adherent crusts are found which when picked off leave a superficial ulceration (*see* Figs 50–53)

The terebrant type has been responsible for the adoption of the term rodent ulcer since it is characterized by its deeply ulcerative habit It is practically confined to the angles of the face chiefly the naso labial fold or the canthus of the eye and less commonly at the root of the ear The lesion on the surface may be comparatively inconspicuous—simply a persistent scabbed area at the naso-labial fold the scab obscuring the hard rolled edge which is always present When scraped out under anaesthesia it is surprising how far the ulceration goes down the depth of the lesion often being greater than the width It is this type of rodent ulcer which can destroy the orbit or penetrate through to the ethmoidal processes and cause death from meningitis (*see* Figs 54 and 55)

Rare types of carcinoma

A curious group consists of very superficial lesions which are often multiple and occur on the trunk or limb or are single and localized to a particular site They

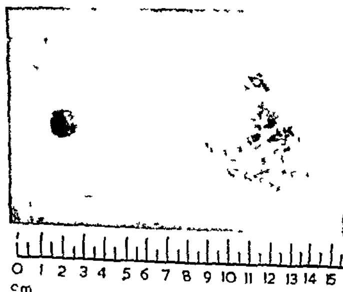


FIG 56 —Showing a case of Bowen s disease The history is that of a single lesion being present for 15 years on the back

include Bowen s disease erythematoid benign epithelioma of Little Paget s disease of the nipple and Queyrat s erythroplasia of the penis

Bowen s disease — Single or multiple lesions occur usually on the trunk They form erythematous plaques of very slow growth which sometimes crust or even form a tumour Histologically the picture is distinctive the changes being entirely intra epidermal After 10–15 years a squamous-cell epithelioma usually supervenes (*see* Fig 56)



(a)



(b)

Fig 54 —(a) A terebrant rodent ulcer at a common site In this case there is a 6 years history (b) Nine months later after treatment and cure by x ray irradiation The full extent of the ulceration is shown



(a)



(b)

Fig 55 —(a) An untreated rodent ulcer more destructive than terebrant with a 15 years history (b) Seven months later Treatment was by x ray irradiation surgery being refused The ulcer has healed with some loss of cartilage

a very small serpiginous rolled edge can be made out The surface is covered with scales and very superficial crusts but no scarring

After many years ulceration can occur and true epitheliomatous changes supervene (*see* Fig 59)

It must be remembered that true rodent ulcers of usual appearance are quite often multiple



Fig 59 —Superficial benign epithelioma on temples and left cheek A squamous epithelioma developed on lesion on the nose

Paget s disease of the nipple —This presents an erythematous plaque on the nipple which is destroyed It may be eczematous in appearance but differs from eczema of the nipple which is a common complaint in having a well defined edge and a certain feeling of solidity and hardness when picked up It may form crusts but does not have the ill defined look of an eczema Intense irritation is much more suggestive of an eczema though it is sometimes not entirely absent in Paget s disease It is usually associated with a carcinoma of the underlying breast or is a forerunner of a duct carcinoma

Histologically large round vacuolated and polynucleated cells are found in the prickle-cell layer known as Paget s cells Cases have been reported of what appears

Erythematoid benign epithelioma —This can look identical with Bowen's disease (see Figs 57 and 58) On histological examination the lesions are found to be true rodent ulcers They are commonly multiple and continue to occur over many years They have a curious look as though painted on the skin and occasionally



FIG 57 —A superficial pagetoid rodent ulcer The lesion is below the knee there is a suggestion of a rolled edge at 1 o clock

FIG 58 — A superficial pagetoid rodent ulcer in same patient as shown in Fig 36 The lesion is above the knee with a painted on appearance

(2) Increase in size or depth of colour

(3) Bleeding scabbing and ulceration

The draining glands are early involved and if palpable are a certain sign of dissemination (which occurs both by the lymphatics and by the blood stream) metastasis occurring locally in the skin in *the form of small pigmented streaks and* moles A fatal outcome is the usual rule (*see* Fig 61)

Differential diagnosis

The close resemblance between an early papular epithelioma and the rodent ulcer of button type has already been discussed Other papular lesions which quite frequently cause difficulty are simple virus warts and moles

Virus warts

As a rule warts have no inflammatory reaction around the base and the cauliflower like surface can be clearly identified with capillary vessels Even so it is



FIG 61 —Melanoma of orbit (a common site) with a 3 months history This lesion was rapidly fatal



FIG 62 —Showing a wart clinically indistinguishable from an epithelioma The pathology is that of a wart

occasionally impossible to be certain with a fleshy quick growing virus wart without biopsy (*see* Fig 62)

If such a lesion is scraped out under a local anaesthetic the diagnosis can usually be hazarded since a wart scrapes off clean and leaves a smooth bleeding surface whereas an epithelioma has altogether a more irregular and craggy base and feels tougher to scrape off Such a procedure may be legitimately adopted if a biopsy report and subsequent radiotherapy are speedily available

to be clinically and histologically, Paget's disease occurring on the vulva penis and axillae (*see* Fig 60)

Queyrat's erythroplasia—Clinically this is indistinguishable from Paget's disease, and indeed if the latter can occur on the penis the difference is only anatomical

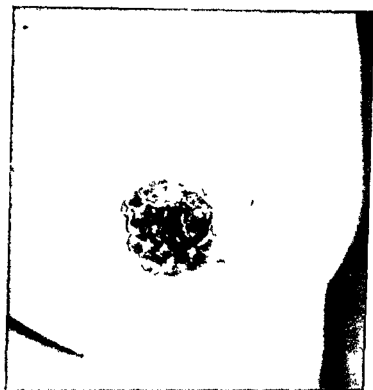


Fig 60—Paget's disease of the nipple Note the clearly marginated edge

Melanoma (melanocarcinoma)

This arises from a naevus of pigmented or of non pigmented type All naevi are potential candidates for this malignant change When one considers that practically every individual has a naevus on the skin somewhere and that melanoma is fortunately rare it is obvious that the possibility of any given naevus becoming a melanoma is remote Andrews (1946) states that the flat hairless coal black slightly elevated mole is the most dangerous particularly if subject to irritation which conforms with the author's experience

Sequeira Ingram and Brain (1947) however report cases of melanomas occurring *de novo* on the skin of the soles in natives—areas which are the least pigmented of the body Repeated trauma is suggested as the cause

The changes in a pigmented mole which suggest the advent of malignancy are as follows

(1) Induration of the base which is probably the earliest and most important sign

(2) Increase in size or depth of colour

(3) Bleeding scabbing and ulceration

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Moles

These are altogether softer, with a regular epithelial surface on which hair follicles can be seen

Indolent ulcers of all sorts may give rise to the suspicion of epitheliomatous change if their edges are everted and thickened Pathological examination may often be essential

Ulcers

Primary chancre —Occurring on the penis and lips of the aged a primary chancre may cause difficulty in diagnosis The history of chancre is a short one the lesion is both less keratotic and less ulcerated A dark ground examination is conclusive

Rodent ulcer —In the cicatricial types differential diagnosis between a tertiary syphilide lupus vulgaris lupus erythematosus and sarcoid may occasionally require a biopsy for certainty

A tertiary syphilide can look very similar though the typical edge of a rodent ulcer is missing A positive Wassermann reaction is conclusive

Lupus vulgaris is recognized by the flat apply jelly nodules on glass pressure and lupus erythematosus by the characteristic scaling

A sarcoid lesion is more subcutaneous and of regular consistency

Intra epidermal carcinoma

The diagnosis of eczema or psoriasis is often made Eczema however has not the clear cut and painted on look of an intra epidermal carcinoma Psoriasis does not ulcerate superficially and the scaling is lamellated



FIG 63 —An innocent naevus deep black in colour and surrounded by black and brown naevi

Melanoma

The changes between an innocent and malignant mole are discussed above (*see* Fig 63)

Seborrhoeic warts are sometimes mistaken for melanomas since they can look very black Occasionally rodent ulcers are pigmented probably arising from pigmented moles

Treatment general considerations

Successful treatment implies the complete removal of all cancer cells or their destruction *in situ* There are however other desiderata which should not be overlooked namely the economic factors of the time and trouble incurred

in treatment and the cosmetic appearance of the cured lesion These may be of great importance to the patient though not of mortal significance A number of methods are available each of which tends to have its special devotees and any one of which may be successful This success depends more on skilled apprecia tion of the problems presented by each given lesion than on a prejudged standardization of method The site size and nature of any lesion must very largely influence the clinician on the type of treatment indicated

Rodent ulcer

This has an inveterate tendency to recur at the edge or less commonly at the depth of an incompletely treated lesion Such recurrences become progressively and rapidly unrespon sive to any method of treatment Rodent ulcers which have been treated by what has been termed a nibbling approach produce large scarring or ulcerative lesions which provide one of the most worrying problems in treatment

On the other hand many small early untreated lesions are quite inconspicuous and not likely to give the patient any trouble for many years He might there fore justifiably choose if he could a method of treatment which is relatively inexpensive and is not time-consuming

Epithelioma

Many epitheliomas of the face are surprisingly benign in regard to the late forma tion of metastases This contrasts sharply with those occurring on mucous mem branes and to a lesser extent on the extremities

Their potentialities for fatal termination make epitheliomas more to be respected than rodent ulcers and allow less margin for waiting or pandering to patients wishes or circumstances

Intra epidermal epithelioma

Here the difficulty lies in the size of the lesion which may involve a large area of skin or from the fact that it involves an awkward site such as the vulva or penis

Melanomas

These provide the hardest problem of all since when they are clinically malignant, dissemination has usually taken place and in that case all methods of treatment are likely to be only of palliative value They are usually radio resistant though isolated instances of radio sensitivity occur

Taking into account these various differences all methods of treatment can be considered together

Surgical treatment

This has much to recommend it In small lesions a local anaesthetic only is necessary The treatment is completed in 7–10 days two visits only being neces sary and there is not the unpleasant period of reaction sometimes unsightly which is incurred by radiotherapy In lesions of doubtful diagnosis a complete excision ensures a comprehensive pathological examination which greatly helps

in the prognosis Small fragments taken by a biopsy punch or even by a scalpel and one stitch are often inadequate and misleading

In lesions with involvement of bone or cartilage surgery is the optimum method

The main contra indication to surgery, which very commonly applies is that lesions may occur on sites such as the eyelids and nose, where wide operative removal necessitates a subsequent plastic procedure

A variant of excision consists in scraping out the lesion with a very sharp spoon which may be easier on some awkward sites and has an advantage that the full depth and any unsuspected outlying islands are revealed It is practically always inadequate, however without subsequent radiotherapy which also applies to excised lesions in which the pathology discloses inadequate removal According to Smithers (1945) such subsequent radiotherapy should be of the same order as that given to untreated lesions

Radiotherapy

This is probably the optimum treatment in the majority of cases Owing to modern trends it is perhaps unfortunately, becoming more and more necessary that it should be performed in large centres where a full range of equipment can be provided There is a risk in small clinics that unsuitable lesions may be treated with the limited equipment available Many unimpeachable cures of simple superficial rodent ulcers will undoubtedly be obtained but a limited number may recur and become radio resistant or in squamous cell tumours dissemination be hastened

A physicist is absolutely essential for the frequent calibration of apparatus since exact dosage is vital

A comprehensive follow up system is also necessary from the long term point of view, in order to assess the recurrence rate of various methods of treatment In radiotherapy as in surgery the golden rule of treatment is 100 per cent application on the occasion of the first treatment which clearly depends on a wide range of apparatus in order to cope adequately with the varying types of lesion

It is beyond the scope of this article to go into the details of radiological technique Publications by Smithers (1945) and McKee (1946) are recommended for those interested

Only certain main principles and the comparable advantages of the different methods will be considered here

X ray irradiation

Contact therapy apparatus gives easy manipulation and necessitates only a short time for treatment It is particularly suitable for superficial tumours a more penetrating radiation being indicated for deep or indurated lesions The dosage may be given in a single application or split over a period which is usually 7–10 days Single dosage is very much more convenient for the patient but the late recurrence rate obtained by Smithers (1945) is appreciably higher than that with split dosage A careful selection of cases for single dosage is essential

Split dosage has many practical and theoretical advantages Slipping of the apparatus and consequent missing of outlying areas are obviated and a very much

more thorough bombardment of the cancer cells at all stages of mitosis is obtained It appears to be safe advice that all rodent ulcers occurring in dangerous positions such as at the angles of the face and all epitheliomas would be better treated by split dosage

A necessary period of reaction consisting of oozing scabbing and crusting follows the treatment which subsides within 2–4 weeks

The cosmetic results are excellent and with modern methods telangiectasia is rare

The bugbear of all radiotherapeutic methods is a radio necrosis which at its worst may replace a comparatively innocent painless small rodent ulcer with a permanent painful large necrotic ulcer In large lesions with involvement of bone the risk may have to be knowingly taken if surgery is refused but necrosis very seldom occurs as an unsuspected complication with modern methods of treatment

Radium

Three methods exist unscreened plates utilizing *beta* rays heavily screened plates needles or applicators using *gamma* rays and implantation of radium needles or radon seeds interstitially under local anaesthetic

Beta rays —These have been used successfully for many years particularly by dermatologists The apparatus is simple and comparatively inexpensive The application takes 3 hours on the average In skilful hands it undoubtedly gives good results in superficial lesions though from the cosmetic angle the late appearance of telangiectasis appears to be rather commoner than with other methods

Gamma rays —These necessitate a more expensive apparatus and are more suitable for deep lesions

Interstitial implants —Theoretically the chief advantage claimed is that the effect of the radiation is employed to its maximum extent at the depth of the lesion In some cases using radon seeds the radiation appears to have been irregular and unsuspected necroses *have occurred* The treatment is rather tedious for the patient who has to have a local anaesthetic and must carry the implants about in him for 3–4 days returning again to have them taken out

Diathermy cautery and carbon dioxide snow

Small superficial rodent ulcers can be successfully treated by any of these means Carbon dioxide snow has a special indication in the flat multiple type of rodent ulcer which is essentially superficial *In Bowen s disease and the intra-epidermal* carcinomas its justification is doubtful in view of the later recurrence of epitheliomas which has been noted

If diathermy or cautery is used it must be employed without regard to the resulting scar Probably the best method is to circumvallate the lesion to some depth which can then be lifted out making a biopsy possible The base is then thoroughly treated

In view of the bad results of excision obtaining in melanoma treatment by diathermy on these lines has its advocates

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CHAPTER 6

DISEASES DUE TO PHYSICAL CAUSES

ALLAN BIGHAM

IT IS being more and more realized that no one factor can be given the sole responsibility for the causation of even a specific disease This conception must be borne in mind when describing skin affections due to physical causes An endeavour will be made to describe only those affections in which physical causes play the major role Where more than one physical cause is involved the affection is dealt with under the cause considered to play the major part

THERMAL EMANATION

Excessive heat

Sudamina

In this condition there is an eruption of minute superficial vesicles containing sweat Sudamina may occur during acute febrile illness and resolves spontaneously in a few days A mixture of lead and calamine lotions may be used to relieve the condition

Erythema ab igne

This condition is caused by a heavy deposit of melanin in the basal cellular layer covering the areas of the skin supplied by anastomotic blood The intervening

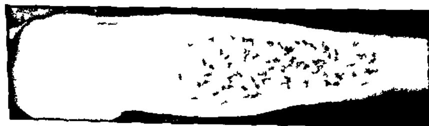


FIG 64 —Erythema *ab igne*

normal areas receive a more direct blood supply (Fig 64) Women are the chief sufferers owing to their habit of sitting close to the fire practically no protection being afforded by thin stockings The condition once well established is irreversible

Burns

The treatment of burns is a surgical responsibility but two points about them may be mentioned in a dermatological work The appearance of the electrical burn

differs considerably from that of the ordinary heat burn and is worthy of comment Electrical burns caused by contact with the conductor present a round bloodless cold appearance they are pale yellow in colour and are painless There is no blistering erythema of the area and healing is much slower than in the case of a flame burn The other point is that burns of all kinds frequently result in keloid formation This curious tissue reaction has never been explained satisfactorily, and it presents a major problem to the plastic surgeon repairing extensive burns Keloids may disappear after many years without treatment If active measures have to be considered early keloids may respond to x ray therapy or to radium therapy Keloids of long duration may be excised and then x rays or radium used immediately the stitches have been removed

Subnormal heat (cold)

Marble skin (livedo reticularis)

The condition of livedo reticularis is usually seen on the legs of young people exposed to cold It presents a mottled bluish network surrounding areas of white skin and is a manifestation of arteriole spasm and capillary dilatation due to cold As in the case of erythema *ab igne* mentioned above the same vascular field is affected there being however, no pigmentary response A point to remember is that if livedo reticularis occurs and persists in adult life a systemic disease should be suspected Tuberculosis syphilis rheumatism alcoholism or hypothyroidism may be the cause

Acrocyanosis

Acrocyanosis is the name given to a persistent dusky red coloration of the hands and feet occurring in adult life It is allied to the chilblain circulation and indeed chilblains frequently develop on the affected areas in cold weather Hyperidrosis is often an associated condition and the writer considers that females are more frequently affected than males The treatment is similar to that used for chilblains (*see* below)

Erythrocyanosis crurum

Erythrocyanosis crurum is an affection mainly occurring in young women The lesions present on the outer side of the lower third of the legs and the condition can be unilateral though it is usually bilateral The area is cold to the touch and bluish in colour, with visible dilated venules The ankles are thickened and unattractive and cold weather produces a marked exacerbation of the condition (Fig 65) The problem is that of the chilblain circulation and treatment is on the same lines as for chilblains (*see* below) The writer however does not consider ganglionectomy to be justifiable unless the disability is marked

Chilblains (erythema pernio)

The basic problem here is that of an incompetent peripheral circulation which breaks down in the presence of cold producing bluish red swellings which usually appear on the fingers and toes and occasionally on the nose and ears and are attended by itching and burning The histology reveals a constriction of the arterioles with a dilatation of the smaller vessels resulting in capillary stasis If cold

weather is accompanied by dampness the condition is made worse It should be remembered that severe chilblains may ulcerate superficially (Fig 66)

Two conditions should be considered in the differential diagnosis papulo-necrotic tuberculide and lupus erythematosis

In papulo necrotic tuberculide the lesions occur on the limbs or trunk as well as on the extremities They leave depressed pigmented scars There is no sign of peripheral circulatory distress Other signs of a tuberculous focus may be found

In lupus erythematosis the lesions appear on the dorsal aspect of the fingers as bluish red plaques They show the superficial scaling and follicular plugging not seen in chilblains There is no itching or burning and almost certainly other lesions will be found on the face and scalp The lesions do not react to cold

Treatment —The length of the list of therapeutic successes tells its own story The endocrine link up with the control of the vasomotor system is still far from being understood There seems to be a consensus of opinion that a large number of chilblains would disappear if spinsters over 30 years assumed the bonds of matrimony

The following is the writer s therapeutic line of attack

(1) Regular brisk exercise

(2) Warm loose fitting coverings for the extremities

(3) Calciferol 50 000 units twice daily together with calcium gluconate 30 grains three times daily (A careful watch must be kept for calciferol intolerance denoted by anorexia nausea or vomiting)

(4) The application of the following ointment with brisk friction twice daily

Phenol – – – – –	1 per cent
Camph – – – –	6 per cent
Bals Peruv – – –	2 per cent
Paraff	
Adeps Lan Hydros – –	aa ad 100 per cent

This preparation was of considerable use to the personnel of the A T S during World War II

Physiotherapy ionization short wave diathermy and ultra violet irradiation all have their followers and can be of use in different cases Latterly nicotinic acid has been revived and is of use in doses of 50 milligrams twice or thrice daily In very severe cases causing considerable disability ganglionectomy may have to be considered

Angiokeratoma

This rare disease is often preceded by chilblains and begins with red spots which increase to produce small vascular growths the size of a pin s head which eventually become hyperkeratotic The sites of election are the dorsal aspects of the toes and fingers and the scrotum They cause no trouble but for cosmetic reasons may be removed by means of the cautery or surgical diathermy

Frost bite

When the extremities are exposed to sub zero temperatures for a short time or to temperatures just above zero for a prolonged time the condition of frost bite



FIG 65 —Erythrocyanosis crurum

FIG 66 —Chilblains



is established The soft tissues are frozen and the local blood supply is cut off The degree of severity may extend from erythema and oedema to gangrene of the whole extremity affected

Treatment—This is not a dermatological responsibility surgical text books should be consulted for the details of treatment *It is necessary to mention however that all first aid measures should be directed to a very gradual defrosting b cause* heat applied too soon may accelerate developing necrosis

ACTINIC EMANATION

Sunlight

Freckles

Fair skinned persons develop small brown macules on exposure to sunlight In these individuals pigment formation is confined to the spots They should avoid *undue exposure to sunlight* and *in bright weather should wear a protective* application such as 10 per cent tannic acid in 25 per cent spirit or calamine lotion plus ½–2 per cent Ichthyol

Permanent freckles namely freckle which do not disappear *during the winter* are considered to be allied to xerodermia pigmentosa (*see* page 117)



Fig 67—Acute solar dermatitis

Acute solar dermatitis

In the fair skinned races exposure to strong sunlight before *protective* pigmentation has been established is followed in a few hours by itching burning

erythema and swelling of the areas exposed In severe cases bullae may be formed Where reflected light is a considerable factor, for example over snow and ice and by the sea the reaction is so much the greater The affected layers of the epidermis peel off and a thicker layer is formed with increased pigmentation in the basal layer (Fig 67)

Prophylaxis —At the beginning of the bright weather short exposures to sun light are advised For the rest of the time until the patient is acclimatized the use of 5–10 per cent tannic acid solutions is advisable Two per cent quinine is often recommended but in the writer s experience, so many individuals react to quinine locally that he has discarded its use Calamine cream with or without ½–2 per cent Ichthyol may prove useful The *para* aminobenzoic acid esters have a considerable vogue in America, and *para* aminobenzoic acid 15 per cent, in vanishing cream is a well tried anti sunburn preparation

Treatment —Exposure to sunlight is prohibited at once Evaporating lotions such as a dilute solution of lead subacetate kept on ice should be used as constant packs, and followed by zinc or calamine creams

Chronic solar dermatitis

This condition results from exposure to strong sunlight over a number of years Sailors skin and farmers skin belong to this group Pigmentation, atrophy telangiectasia and warty growths which may become malignant are features of the condition on exposed parts of the body

Treatment is directed only to the keratoses which become malignant Further exposure to strong sunlight is to be avoided

Cutis rhomboidalis nuchae (peasants skin)

The part affected is the back of the neck of agricultural workers The area becomes thickened and deep red and the creases of the skin produce rhomboidal patterns Prolonged exposure to sunlight in the bent position is the reason for the siting of the area affected It is very seldom that sufferers from this condition present themselves for treatment Protective creams may be used or a cloth attachment to the back of the cap or hat advised

Summer eruption of children (Hutchinson s summer prurigo hydroa aestivale)

The eruption appears on the exposed areas in children usually up to the age of puberty It appears in the summer months disappearing in the winter only to reappear in early summer and consists of erythema papules and vesicles The condition being limited by the onset of puberty there appears to be a case for a basic endocrine imbalance However the exact nature of this imbalance is not yet explained Owing to the irritation rubbing often sets up an eczematization which may last through the winter months The section of the spectrum involved is that from orange to green

Prophylaxis —The visible rays of the spectrum may be cut out by application of calamine lotion or cream containing 1–2 per cent of Ichthyol before exposure in the bright months



Fig 68 —Actinic dermatitis (adult type) of 3 days duration Note swollen face and orbits The patient suffered from skin trouble of acute onset at the *same time in the preceding year*

Fig 69 —Actinic dermatitis (adult type)





Treatment —Confinement indoors over the acute phase together with application of zinc cream and 1 5 000 gentian violet in water, is advisable Subfractional doses of x rays are also of value

Although the above condition is, in the classical sense, confined to childhood a similar eruption frequently appears during adult life and presents a very difficult therapeutic problem In the adult type of eruption the condition may persist throughout the year but is at once aggravated by bright weather (Figs 68 and 69) It is most intractable and frequently fails to respond to fractional x ray therapy and similar treatment or its response is very temporary In conjunction with the above protective methods the writer has found some value in courses of small doses

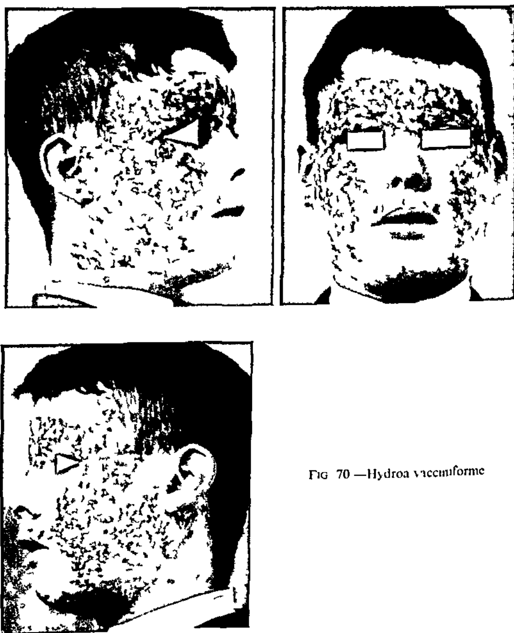


FIG 70 —Hydroa vacciniforme

of Myocrysin 0 02 gramme increasing to 0 1 gramme according to the toleration of the individual

Hydroa vacciniforme

This affection may be regarded as a more severe type of summer eruption Small bullae form and resolve leaving pitted scars The condition usually clears at puberty but may persist for a much longer period In contradistinction to summer eruption porphyrin may be found in the urine and faeces of patients with hydroa vacciniforme and in this condition the ultra violet band and blue violet band of the spectrum are the activating parts involved (Fig 70)

Prophylaxis is best attempted with tannic acid preparations and the *para* aminobenzoic acid esters

Treatment is the same as for summer eruption

Xeroderma pigmentosa

Xeroderma pigmentosa is a very severe condition of congenital origin which is immediately activated by exposure to the ultra violet part of the spectrum A condition resembling chronic x ray dermatitis arises with first of all permanent freckles telangiectasia atrophy and the formation of warty growths which develop rapidly into squamous cell epitheliomas Puberty is rarely survived owing to malignant metastases The aetiology is unknown and there is no effective treatment Exposure to sunlight must be avoided and the usual barriers to ultra violet rays must be utilized The malignant growths should receive att ntion as they appear

Photosensiti ers

This group of substances some of them taken internally others applied locally cause an intense reaction in the skin if it is subsequently exposed to sunlight Individual idiosyncrasy plays a considerable part in the reaction and therefore the condition will not be dealt with in this chapter The list includes the following coal tar pitch asphalt creosote oil rhodamine H figs buckwheat India wheat wild carrot puncture weed alsike clover St John s wort bur clover bunchgrass lady s thumb rabbit bush the sulphonamide group of drugs and acriflavine

PRESSURE

Intermittent pressure

Hypertrophy of stratum corneum (manual workers callosities)

Hypertrophy of the stratum corneum can be regarded as a protective response due to intermittent pressure combined with friction The contact areas develop a thickened stratum corneum Callosities develop on the feet of people with uncorrected orthopaedic disabilities

Hard corns

These are confined to the toes and are produced by shoe pressure on the skin over bony structures The base of the lesion is on the surface of the skin and tapers down to the apex which presses into the underlying tissues

Treatment—Correction of orthopaedic abnormalities and the use of corrective footwear should be the first consideration Surgical excision of the corn of the bursa and of the exostosis underlying the corn may be necessary The services of the chiropodist are obtainable in most modern hospitals today A useful corn paint is the following

Acid Salicyl		
Acid Lact	- - - aa	3 parts
Collod Flex	- - - q s ad	30 parts

This paint is used in conjunction with a felt ring

Soft corns

Soft corns occur between the toes through inter toe pressure They become macerated by heat and sweat Treatment consists in removal of the corns by curettage under local anaesthesia the toes afterwards being kept apart by pledgets of lamb s wool X rays have been used with good effect on both varieties of corn but it must be remembered that the effective dosage is high and not without danger of sequelae

Continuous pressure

This type of pressure occurs under trusses calipers tight finger rings and so on and gives rise to a degree of atrophy of the skin producing a thinning of the layers of the epidermis When the offending apparatus cannot be discarded adequate washering of the area with Sorbo padding may be tried

HUMIDITY

Excessive water contact (maceration)

Certain occupations are associated with considerable contact with water, particu larly those of washerwomen cleaners canteen workers cooks and barmaids The stratum corneum becomes macerated the maceration being particularly noticeable on the backs of the hands and fingers and in the interdigital spaces Macerated skin provides poor protection against the micro organisms—yeast groups—and there fore a paronychia is readily set up The areas frequently become the site for eczematization pyodermia painful cracks and similar conditions The main con sideration in this chapter is prophylaxis Workers in the above mentioned occupa tions should wear adequate rubber gloves from the start of employment not after the condition has arisen Barrier creams are now used on a large scale and provide a varying degree of protection Esoban and Rozalex being two proprietary preparations widely used in industry

Excessive water contact plus cold

Immersion foot

The severest cases of immersion foot were those seen during World War II and occurred in men who had been adrift for days in waterlogged boats or rubber dinghies Trench foot which occurred in World War I was another marked example of this condition A much milder condition known as shelter foot occurred in people who had been sitting up night after night in deck chairs in the

air raid shelters The condition arises following constriction of the arterioles and later constriction of the larger arterial vessels causing a dead white appearance of the skin This constriction goes on to a dilatation with a change to red blue coloration If gangrene is avoided large blisters may appear together with swollen red feet accompanied by considerable pain For months afterwards sensory changes and hyperaesthesia can be elicited in the affected limbs

Treatment —Elevation of the limbs which should be kept in a cool dry current of air is the main point Early movement is to be aimed at and considerable psychological encouragement must be maintained by all teams treating these cases

Excessive humidity plus heat

Prickly heat

There are very many diverse opinions on the subject of prickly heat The writer has the temerity therefore to present his own interpretation of the condition because he was privileged to lead the active investigating group sponsored by Brigadier G W Bamber Consultant Dermatologist to G H Q India Command in World War II

Prickly heat affects a percentage of the white races in subtropical areas in the hot season Where great humidity is an added burden as in Eastern India practically all white people suffer from prickly heat and so do a considerable number of Indians Therefore heat alone is insufficient to cause prickly heat in a percentage of people and deep pigmentation is insufficient to prevent its appearance in a further percentage Under the two conditions of excessive heat and excessive humidity the writer believes that the mechanism of prickly heat may possibly be explained in the following manner The excessive heat causes a great increase in the activity of the eccrine sweat glands in an attempt to rid the body of heat by sweat loss Sweat is poured out in great quantity along the sweat ducts Histologically when the duct reaches the epidermal layer it loses its differentiated cellular wall and is represented merely by a pathway amongst the cellular elements until it reaches the sweat pore on the surface Under the greatly increased output of sweat this pathway is unable to deal with sweat which is not only increased in volume but has taken on a *p*H value to the alkaline side Evaporation from the surface is further impeded by the high external humidity The sweat under these conditions is forced from the normal pathway to form tiny vesicles of alkaline sweat amongst the upper elements of the cellular layer so producing the condition known as prickly heat It is a simple step to maceration of the stratum corneum septic prickly heat tropical bullous impetigo and similar affections

Treatment —This consists in frequent changes of loose light clothing frequent tepid lavage—without soap—to remove surface accumulation and the use of fans and punkas A trip to the hills will clear the condition and pilots noted that their prickly heat disappeared when they climbed to an altitude above the heat-humidity belt and returned on landing both processes occurring in a short space of time

Subnormal humidity (dryness)

In dry climates and in spells of dry weather in other climates the stratum corneum loses its moisture cover (invisible sweat) and tends to crack The use of

lanolin and Vaseline provides a means of softening the stratum corneum and prevents undue evaporation from its surface

X RAY EMANATION AND RADIUM EMANATION (INCLUDING ATOMIC ENERGY)

X-ray dermatitis and radium dermatitis

When x rays and radium are used as therapeutic measures and produce dermatitis it is necessary to point out that a description of this reaction should strictly speaking appear under the heading of dermatitis medicamentosa However, as many x ray workers and radium workers become affected by the elements, the description has remained under Diseases due to physical causes (Fig 71) X radiation plays a considerable part in the treatment of skin diseases radium a much smaller role Should overdosage be given certain sequelae occur which vary according to the magnitude of the overdosage The range covers pigmentation permanent loss of hair, telangiectasia, atrophy, ulceration non healing ulceration and epitheliomas The epitheliomas may produce secondary deposits which may end in death

Treatment

Treatment of overdosage is directed to palliative measures such as lead lotion zinc cream or allantoin 2 per cent in rose water ointment and repeated observation of the lesions to decide whether or not the condition is responding to treatment If response is poor and permanent destruction of the skin takes place the help of the plastic surgeon should be invited The advance in plastic surgery has been very rapid in recent years and today the plastic surgeon and the dermatologist work in close co operation, with vastly increased benefit to the patient

Thorium X

There is slight risk of permanent changes taking place in the skin from use of the *alpha* rays of mesothorium Penetration of these rays can only just reach the surface of the dermis where permanent changes are established However this slight risk must be mentioned so that care is taken to avoid overdosage

RADIATION BLAST INJURIES

Cause	Result
Thermal (electromagnetic radiation)	Burns (a) Flash due to infra red rays and ultra violet rays (b) Flame due to induced fire
Ionizing radiation (a) *Gamma* rays and neutrons	Radiation effects (a) Radiation sickness blood and lymphoid dyscrasias skin damage gonadal damage induced tumours
(b) Induced radio activity in individual and environment	(b) Blood dyscrasias
(c) Residual radio activity from fission products	(c) Blood dyscrasias induced tumours





FIG 71 —Radio-dermatitis following x ray therapy of lupus vulgaris

Atom bomb effects

The following classification was suggested by Warren and Draeger (1946) by *their observations on cases seen at Nagasaki and Hiroshima* The effects were divided into two groups injuries produced by ordinary high explosive effect, and radiation blast injuries We are concerned here with radiation blast injuries, which can be tabulated in the manner shown on page 120

It is pointed out that the main effects of radiation blast (ionizing) are exactly comparable to those obtained by very heavy radiation with roentgen rays The effect of both *gamma* rays and neutrons on tissue is to produce ionization so that the results are identical No evidence was found of induced radio activity but it was considered that this would follow the use of more powerful and modernized atomic bombs

REFERENCES

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CHAPTER 7

EXOGENIC DERMATITIS

F F HELLIER

DEFINITION

THE TERM exogenic dermatitis is used to include all those cases of eczematous dermatitis in which an external irritant is the immediate and most important cause of the eruption

AETIOLOGY

Even in those examples most obviously provoked by an external irritant there is always a constitutional factor playing some part If a chrome worker develops a dermatitis on his hands it is clearly the chrome which is responsible but one must also consider why this workman and not his fellows is affected he may have been doing the same work for years with impunity before his skin breaks down so why does the attack occur at this precise moment? When the patient is removed from the irritant the rash may subside but often it persists and may spread to areas with which the external agent has never had contact Thus some process has been set going in the patient which is now independent of the external factor and which cannot be distinguished clinically from a constitutional eczema Some dermatologists differentiate sharply between the direct effect of an irritant on the skin and this secondary eczematous reaction which may develop but while appreciating the difference the author feels that the two conditions merge so intimately that they cannot be considered separately

External irritants

External irritants may be divided into two groups primary irritants and sensitizing agents

A primary irritant may be defined as a substance which will produce irritation of the skin in anyone who is exposed to it for sufficient time and in sufficient concentration further the reaction is roughly proportional to the degree of exposure Common primary irritants are soaps and alkalis but also included among primary irritants are degreasing agents some of the modern soapless detergents strong formalin and other chemicals Even water will often exacerbate eczematous lesions and certain physical agents such as strong sun friction and cold winds may have the same effect Primary irritants probably account for 80 per cent of all cases of exogenic dermatitis

A sensitizing agent on the other hand will in general only produce a reaction in a proportion of people and only in those who have been *previously exposed* When such a reaction does occur it is often out of all proportion to the degree of exposure as when slight contact with a primula plant produces a dermatitis for which the patient has to go to bed Almost any substance may *occasionally* be a sensitizing

agent but some are much more active than others T N T may cause dermatitis in as many as 50 per cent of workers while the *author only knows of one instance of* sensitivity to copper Some substances, such as paraffin oil and formalin can act as both primary and sensitizing irritants affecting almost everyone when used for prolonged periods or in a strong concentration but also causing a severe reaction in high dilutions in a small proportion of people who are specifically sensitized

PATHOGENESIS

In discussing the peculiar reaction of the skin which is called eczematous dermatitis two processes seem to be involved which merge so gradually into each other that they cannot be clearly differentiated At one end there is a reaction which is predominantly due to some external irritant and which the author calls an exogenic dermatitis At the opposite extreme is a condition arising spontaneously or at least without the intervention of any external factor, which will be referred to as constitutional eczema This nomenclature is accepted by many English dermatologists but the term eczema is a controversial one some dermatologists would *banish it entirely, whilst still others use it only for those cases in which a sensitization* reaction has developed The most characteristic examples of an exogenic dermatitis bear all the signs of an allergic reaction they occur only when the skin has been previously exposed they depend on the quality and not the quantity of the external irritant and disappear when the irritant is removed Though it is *impossible to demonstrate specific antibodies in the blood* it has been claimed that they can be demonstrated in the serum of artificially produced blisters It would appear therefore that antibodies are fixed in the skin probably in the cells of the epidermis and that when the correct antigen is brought into contact with them the combination of antigen and antibody sets going the process which is called eczematous dermatitis, possibly by the production of some eczematogenic substance In constitutional eczema lesions which are indistinguishable clinically and histologically from the fully developed picture above can occur in the absence of external irritation such *lesions are easily exacerbated by non specific irritants* such as soap and water They may also be produced in susceptible subjects by primary irritants with varying degrees of facility according to the vulnerability of the skin The cells of such a skin are apparently unstable and might be assumed to liberate the hypothetical eczematogenic substance too readily either spontaneously *or following endogenous stimuli or as a result of non specific* exogenic irritation This instability may be congenital but it can also develop in a skin which has been exposed to primary irritants for long periods once it has developed it may last a long time or even indefinitely Thus dermatitis due to primary *irritants* commonly occurs in those whose skin is already unstable either congenitally or from prolonged exposure to irritants or through old age this is the reason why such a dermatitis is slower in clearing than true sensitization dermatitis why it is more liable to relapse and why it often produces a pattern approximating to that of a *constitutional eczema*

HISTOPATHOLOGY

The earliest microscopic changes in exogenic dermatitis are dilatation of the vessels of the papillae and superficial layers of the dermis causing clinical erythema

together with intracellular and intercellular oedema of the stratum malpighii or spongiosis There is a difference of opinion as to which of these processes is primary and whether the oedema of the epidermis is due to tissue changes there which increase the osmotic pressure and thus attract fluid or whether it is due to greater filtration caused by the raised permeability of the capillary walls and accelerated flow in the capillaries If the reaction is acute the oedema of the epidermis increases till vesicles are formed which contain degenerate epidermal cells lymphocytes and the like these break through the horny layer and discharge their contents If they become infected they are filled with degenerate polymorphs and form pustules At a later stage or in less acute attacks the prickle-cell layer becomes thickened (acanthosis) and the normal process of keratinization is interfered with in places so that the cells of the horny layer retain their nuclei (parakeratosis) and the superficial layers break away giving rise to the clinical picture of lichenification and scaling In the dermis there may be varying degrees of oedema according to the intensity of the irritation together with dilatation of the capillaries and perivascular infiltration with small round cells

PREDISPOSING FACTORS

Patients vary in their liability to develop dermatitis examination of the skin and the patient s history may sometimes enable one to foretell vulnerable types Fair skinn d people are more sensitive than brunettes and white skinned races more than those with dark skins Other susceptible people include those with congenital dry skin or xerodermia and those with a history of recurrent attacks of constitutional eczema and *a fortiori* those with actual eczematous lesions possibly also pati nt with marked hyperidrosis and those with a seborrhoeic diathesis Although the above stand up badly to primary irritants particularly soap and water and alkalis they are not necessarily more likely than normal people to become allergically sensitive A history of other forms of allergy such as asthma or hay fever does not increase the liability to sensitization dermatitis it is in fact probably impossible to forecast which persons will become sensitized to a given irritant

PRECIPITATING FACTORS

Exposure to an irritant chemical may lead to dermatitis after a few days or weeks when the skin has become sensitized More often a patient may have been in contact with a substance for years before suddenly developing dermatitis This may simply be due to the skin wearing out and often happens in workers of about 60 years of age whose skin has gradually become drier and less resistant with passing years An attack may follow an increase of working hours or some change in a manufacturing process so that the degree of exposure is increased mothers of young babies often develop dermatitis due to the extra washing caused by the diapers There may have been some change in the external irritant of which the patient is unaware as for instance the substitution of a new chemical in a cosmetic preparation or in a process at his work The onset may coincide with a constitutional upset such as the menopause or some psychological trauma or a period of worry It is also quite common to see a workman break down when he starts work again after a period of illness even though this has been quite unconnected with his skin as if the latter had lost its immunity Local damage to the skin either from an

actual injury itself or from treatment for such an injury may have a similar effect An eczematous eruption elsewhere on the body may lower the resistance of the whole skin surface and precipitate an attack of dermatitis on those areas exposed to an external irritant, this may occur, for instance following a gravitational eczema of the legs or a sulphonamide dermatitis developing round an abrasion The Americans stress the importance of ringworm between the toes as a pre disposing factor in England at least in the north, this sequence is rare though no doubt an acute ringworm infection of the feet such as is common in hot climates might increase the vulnerability of the skin

EXTERNAL IRRITANTS

These are so multitudinous that it is impossible to mention more than a small proportion Below are given as a guide to the type of substances which should be suspected some of the commoner irritants which affect each area of the body

Hands

Primary irritants

The most common of these are soaps alkalis and synthetic detergents used by housewives charwomen hairdressers wool scourers and almost any workman who has to scrub his hands after doing dirty work, degreasing agents including petrol paraffin oil and trichlorethylene though these can also act as sensitizers lime cement and allied substances the mechanical irritation of adherent dough in some cases of bakers dermatitis wet sand in pattern makers and other foundry workers and coal dust combined with sweat in miners especially in hot pits also the effect of heat and damp on those doing steam pressing and similar work

Sensitizing agents

Though the following substances principally affect the hands they may at times attack other areas of skin either in addition or independently They include chrome salts used by leather steel and dye workers and by chrome platers also nickel mercury and cadmium aniline and other dyes during their manu facture in dyeing processes in printing and in the handling of dyed material tar products in gas briquette and tar workers explosives such as tetryl T N T picric acid and fulminate of mercury many of which irritate a high proportion of persons handling them and cause very severe dermatitis turpentine and allied substances handled by painters and french polishers diesel oil petrol and paraffin used by lorry drivers motor mechanics and petroleum workers polishes handled by cleaners lubricating cooling and cutting oils used by workers with all types of machine tools in a host of industries Flowers of many kinds handled by gardeners florists and housewives are also agents though lesions from these are often more marked on the face common offenders in Great Britain are the *primula obconica* which is usually found as a plant in the house chrysanthemums and tomatoes together with very many others In the United States of America the poison ivy and allied plants are of outstanding importance whilst in tropical jungles dermatitis from numerous plants and trees may seriously interfere with military campaigns Sawdust of various kinds may cause dermatitis in woodworkers

particularly in those handling such woods as teak ebony and Oregon pine likewise flour may be the causative agent in bakers and confectioners the irritation may sometimes be due to pure flour but more often is caused by bleaching agents such as ammonium persulphate Another agent is rubber either during its manufacture or as gloves for surgeons and industrial workers or when it is used for other purposes Drugs may be sensitizing agents in chemists and dispensers among such drugs are morphine strychnine and antibiotics such as penicillin and streptomycin formalin used by pathologists and laboratory workers antiseptics such as Lysol and Dettol handled by nurses local anaesthetics used by dentists or in anaesthetic ointments adhesive tape and Elastoplast and therapeutic applications especially patent ointments but quite often substances prescribed by the doctor himself such as sulphonamides penicillin mercury preparations and flavine The list could be prolonged indefinitely as almost any chemical may at times cause sensitization and



Fig 72 —Severe dermatitis of lips caused by lipstick

new substances are constantly being introduced into industry and into everyday life in this connexion we need only mention the enormous increase in the use of plastics and synthetic resins most of which are potential irritants and which are used for such varied purposes as lacquers electrical equipment car fittings stockings finishes for garments rubber articles and spectacles

Face

This may be irritated by volatile irritants by those conveyed to it by the patient s fingers and by those applied directly to the face or to adjacent areas such as the scalp Volatile irritants include dusts of many kinds petrol and other fumes flour in bakeries paint and oil spraying and pollen from flowers though some of the above may reach the face *via* the fingers By this latter method almost any irritant may get on to the face for the patient touches the face constantly however much he

actual injury itself or from treatment for such an injury may have a similar effect An eczematous eruption elsewhere on the body may lower the resistance of the whole skin surface and precipitate an attack of dermatitis on those areas exposed to an external irritant, this may occur, for instance following a gravitational eczema of the legs or a sulphonamide dermatitis developing round an abrasion The Americans stress the importance of ringworm between the toes as a predisposing factor in England at least in the north, this sequence is rare though no doubt an acute ringworm infection of the feet such as is common in hot climates might increase the vulnerability of the skin

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Body

Dermatitis on the body is commonly due to some irritant in the clothing and a careful consideration of the site of the first lesion and the patient s clothes will usually indicate the offending garment Characteristic of a dress or shirt dermatitis is involvement of the folds of the axilla while the apex remains clear the elbow bends where the skin is moist and fine and places where the clothes are pressed against the skin as under the belt or braces or round the collar Irritants in material include dyes various anti crease and other finishes many of which



FIG 74 —Dermatitis round anus caused by Menopax ointment

contain synthetic resins there is often evidence of bleeding of the dye due to sweat but this is not essential Occasionally the patient may have applied some obvious irritant such as embrocation for a strained muscle or an anti scabies remedy Axillary lesions may also be due to an epilatory agent a preparation used to prevent sweating or a rubber dress preserver

Genitals

Dermatitis here is usually due to the application of some medication such as calomel ointment used prophylactically against venereal disea e m rcury ointment for crab lice or some fungicide for ringworm of the groin Occasionally it

denies it Dermatitis on the face and especially round the eyes may result from nail varnish even in the absence of lesions on the fingers Irritants which may be directly applied to the face include cosmetic creams powders, lipstick (Fig 72) eyeshadow scent behind the ears soaps *shaving cream, toothpaste, near the face hair dyes* and setting lotions are irritants which are directly applied The distribution of the *rash will often suggest which of these should be suspected* The author has seen dermatitis of the face in a woman produced by her husband s dyed hair The most dangerous hair dyes are the aniline dyes especially those derived from *para* phenylenediamine which may cause very fierce reactions Spectacle frames either metal or plastic may produce characteristic lesions over the bridge of the nose (Fig

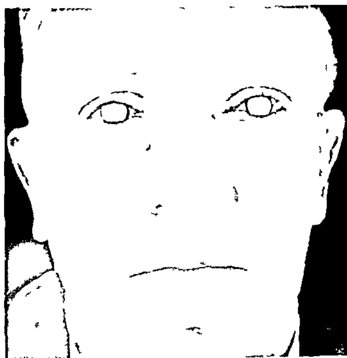


FIG 73 —Spectacle dermatitis of the sides of nose caused by plastic frames

73) and at the back of the ears Local medication such as boracic lotion used for *bathing the eyes,* or atropine should not be forgotten Recently the author has seen two cases caused by fumes from a gas stove and this may be commoner than *is usually realized*

Neck

The commonest cause of dermatitis on the neck is some article of clothing such as a fur collar or woollen jumper a scarf or a high necked dress but it should not be *forgotten that the neck* particularly in women is very accessible to the hands which may be the source of the irritant Occasionally a locket or other piece of jewellery may cause *trouble* usually because it contains nickel or chrome Actinic dermatitis often affects the V of the neck

tissue such as the eyelids or the penis but it can be detected elsewhere by the brawny tense feel of the skin This may pass into a weeping stage with crusting and often secondary infection with pustules or sticky yellow impetiginous crusts In less severe attacks the red oedematous phase is followed by scaling which is often intermingled with oozing patches the lesion may then resolve or the patient s scratching may produce thickening of the skin with exaggeration of the natural lines or lichenification In more chronic lesions the oedema is absent and the erythema may be less marked and partly obscured by lichenification especially on



FIG 76 —Dermatitis due to penicillin neoflav powder showing typical confluent vesicular lesions on an area sharply defined above and below

the hands where the epidermis is thick here the thickening of the skin is often associated with fissures especially over the joints and in the palm and these may become infected and lead to lymphangitis and adenitis

Though one cannot always determine on inspection whether a dermatitis is due to a primary irritant or to a sensitizing agent in general reactions to the latter are more dramatic in onset with the oedema more marked and the erythema more uniformly diffuse With primary irritants the onset may be insidious with dryness scaling and roughness of the skin without any swelling sometimes the rash may be patchy presenting as red papulo-vesicles which may run together into num mular plaques indistinguishable from those of a constitutional eczema (Fig 78)

As the detailed clinical appearance varies with the site the more important areas will be considered separately and at the same time attention will be given to those conditions from which exogenic dermatitis must be distinguished

Sites of Infection

Hands

Exogenic dermatitis usually starts on the backs of the hands and between the fingers even after exposure to strong irritants the palms may remain unscathed

may result from the use of contraceptives by either partner In the woman it may be due to douches In both sexes dermatitis of the genitals or perianal area may result from antipruritics containing anaesthetic agents (Fig 74)

Thighs

A very characteristic pattern is produced especially in stout women by irritation from the suspenders (Fig 75) this is usually due to sensitivity to nickel and may be accompanied by dermatitis under lockets wrist watches or other nickel objects Occasionally the rubber is at fault Patches of dermatitis in relation to pockets may be due to petrol from a cigarette lighter phosphorus from matches or some other



Fig 75 —Suspender dermatitis due to nickel

object carried by the patient In men engaged in engineering and similar trades the trousers may become saturated in oil and lead to dermatitis on the fronts of the thighs

Feet

Irritants here are usually dyes or finishes derived from the socks or chrome or dyes from the shoes, dermatitis of the feet occurs more often in hyperidrosis as the sweat helps to dissolve the active agent Another likely irritant is some remedy used to treat ringworm of the toes and to which the patient has become sensitive Occasionally men doing very dusty work as in a foundry or coal mine will get irritant dusts inside their shoes or they may develop a dermatitis of the lower leg sharply limited by the top of the boot

CLINICAL PICTURE

This varies with the potency of the irritant and with the degree of sensitization of the patient In an acute attack the affected skin is diffusely red with oedema and often superficial blistering (Fig 76) The oedema is particularly marked in lax

cases of exogenic dermatitis due to primary irritants may produce a very similar picture (*Fig 78*) *and only* a careful history and possibly prolonged observation will reveal whether the external irritant or the constitutional *factor is the more* important Occasionally an exogenic dermatitis *may* be limited to the tips of the fingers this is characteristic of french polishers but it may occur in other trades



FIG 78 —Dermatitis in a ship s cook due to a primary irritant The lesions are patchy without gross vesiculation and oedema and resemble those of a constitutional nummular eczema

Friction from some special motion at work may determine the site of onset (Fig 79) it is common to see lesions on the inner border of the hand in bench workers who rub this part on the oily bench

Arms

Exogenic dermatitis may occur on the forearms without lesions on the hands in workers who wear gloves or who get their sleeves soaked in oil It *may* also occur with dusty substances such as flour which may initially irritate the more sensitive skin of the arm

Face

Exogenic dermatitis of the face is characterically associated with puffiness of the eyelids which at times may completely close the eyes (Fig 80) This is such an important sign that if it occurs in the course of a constitutional eczema or an impetigo of other condition of the face the possibility of irritation by some external agent usually therapeutic should always be considered Only three conditions commonly

With severe dermatitis, especially in true sensitization the whole of the back of the hand is red, swollen and covered with confluent superficial easily ruptured blisters, in these cases the palm may show deep firm, discrete blisters but one usually gains the impression that the dorsum is the site of the severest lesion In less acute attacks particularly those due to primary irritants, the dermatitis may start as redness scaling and irritation between the fingers where the skin is thin and where, also irritants such as soap tend to collect The lesions may spread on to the

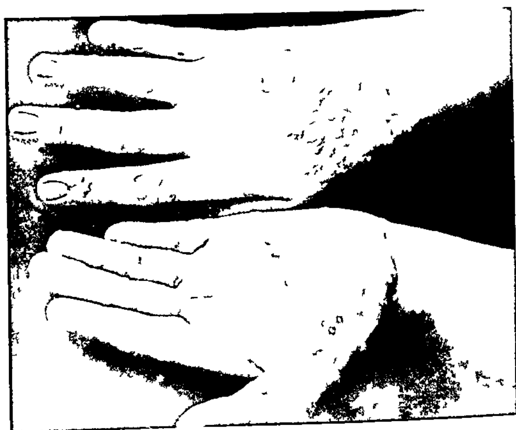


Fig 77 —Eczematous pompholyx of palms complicated by exogenic dermatitis due to tar on the back of the right hand Compare the discrete vesicles of the left palm with the confluent blistering on the right hand

back of the hand and also on to the front of the wrist with cracking and lichenification at times the palms may be affected and show thickening with deep painful fissures Exogenic dermatitis of the hands must be differentiated from nummular eczema, from eczematous cheiropompholyx and from dermatophytides secondary to ringworm infection on the feet Cheiropompholyx is probably indistinguishable clinically from a dermatophytide but both can usually be distinguished from exogenic dermatitis because they involve the palm rather than the dorsum of the hand and though less definitely the whole length of the sides of the fingers equally and are not more marked in the web the blisters in pompholyx are more discrete, tenser and rupture less readily (Fig 77) Nummular eczema occurs patchily on the dorsum and is often associated with similar lesions of equal intensity on the forearms even though these may be covered by clothing Unfortunately certain

cause marked oedema of the eyelids apart from local staphylococcal infections and trauma these are angioneurotic oedema in which the swelling may last up to 24 hours leaving the skin afterwards quite normal and which is unaccompanied by constitutional upset erysipelas which is usually asymmetrical and may close the eye for 2 or 3 days is accompanied by marked malaise and by pyrexia and is followed by scaling and exogenic dermatitis in which the swelling may last 2 or 3 days is usually but not always bilateral and is followed by scaling but is without any general disturbance of health Even in mild attacks with only slight redness and roughness of the skin there are often traces of puffiness observable In contrast to the above constitutional eczema of the persistent infantile (atopic) type may produce severe lesions of the cheeks and forehead with but little involvement of the eyelids and seborrhoeic dermatitis may be accompanied by severe blepharitis with loss of eyelashes and yet show practically no swelling of the lids It is however sometimes difficult to distinguish a mild dermatitis due to irritants such as cold winds soap and water from a diffuse seborrhoeic dermatitis of the face this is possibly because external irritants may in a patient with seborrhoea produce a

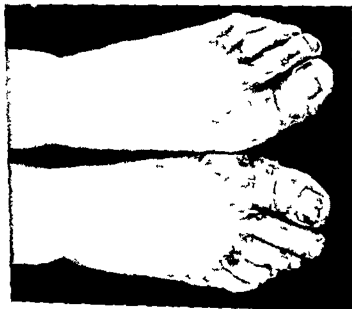


FIG 81 —Dermatitis of toes due to dye from shoes The interspaces between the toes were free from any eruption

seborrhoeic type of reaction Actinic dermatitis due to exposure to the sun has usually a characteristic distribution over the bridge of the nose spreading on to the upper parts of the cheeks and sometimes also to the forehead

Feet

Exogenic dermatitis here is rarely vesicular but if it is the blisters are thin walled and quickly rupture leaving oozing surfaces Usually this condition involves

Fig. 79.—Dermatitis of the left hand in a hairdresser due to setting lotion. Note the sharp limitation to the distal half of the left hand where the skin touched the hair whilst the right hand escaped.



Fig. 80.—Dermatitis of the face due to the local application of penicillin. Note the characteristic swelling of the eyelids.

the thighs and the correct diagnosis of suspender dermatitis is made A widespread sulphonamide rash may result from the treatment of a trivial lesion on the leg or some other covered part and be undiagnosed until this latter lesion is discovered

Effect of cessation of exposure

Improvement of the rash when the patient is removed from a potential irritant suggests that the latter is the cause of his dermatitis though if it fail to improve this does not entirely exclude the possibility A workman with industrial dermatitis often improves at the week end or after a few days holiday and disappearance of symptoms may follow his complete cessation from work The rash of a housewife may clear up if she goes from home only to recur on coming back if so an immediate inquiry into her actions after returning home may elicit the irritant factor One should bear in mind however that a holiday will benefit any type of eczematous eruption The temporary banning of cosmetics or exclusion of the patient from certain types of work or the discarding of certain garments may give useful information which can be checked by repeating the exposure

Appearance of the rash

It has already been mentioned that an exogenic dermatitis especially of the sensitization type usually shows diffuse redness and oedema This latter in particular may give a valuable indication of the presence of an external irritant even without the confluent thin walled blistering which may also occur

Distribution of the rash

This is usually on exposed surfaces and may be sharply delimited by the collar or sleeves or if the rash is on the body by the area covered by some undergarment Occasionally an irritant such as oil may soak into the clothes and produce a dermatitis on the underlying skin and very volatile irritants may attack sensitive areas such as the genitals or elbow bends while sparing exposed areas this may occur with mustard gas One s suspicion should be aroused if the distribution is not that of one of the well recognized constitutional patterns The commonest of these are the persistent infantile eczema (atopic) type which involves primarily the bends of the elbows and knees and sometimes the cheeks and forehead though it may be much more widespread the seborrhoeic type affecting the groins and axillae ears eyebrows and scalp the nummular type with discrete well defined oozing plaques on the limbs and eczematous pompholyx which attacks primarily the palms and soles If the eruption does not conform more or less to one of these patterns the possibility of an exogenic dermatitis should be considered Exogenic dermatitis often has an asymmetrical bizarre distribution Thus khaki shirt dermatitis in soldiers on campaign usually started over the great trochanters and was unilateral if the soldier only slept on one side a rash on one thigh was easily diagnosed as due to a box of matches carried in one trouser pocket and a rectangular patch obliquely across the forehead was obviously from the band of a hat worn at an angle An eruption on the left hand only in a spray painter was caused by his holding the objects to be sprayed in that hand An irritant varnish on a lavatory seat produced a very arresting picture (Fig 82)

the exposed surface particularly the backs of the toes though it may spread more widely over the whole area of contact (Fig 81) it is less obvious, if present at all between the toes and this helps to distinguish it from ringworm infection which is most marked in the clefts especially in the fourth cleft An exception of course is when a patient is being irritated by some fungicide he is applying actually between the toes As with the palm the sole is rarely involved in exogenic dermatitis whereas the rash of dermatophytides and pompholyx may be most marked there particularly on the instep where it presents as characteristic rather deep seated blisters which frequently become secondarily infected

GENERAL DIAGNOSIS

A careful history is all important in making an accurate diagnosis A story of sudden recurrent attacks or exacerbations of an eczematous process should always suggest the possibility of an external irritant The following points must all be carefully considered

Exposure to irritants

Reference has already been made to many of these and we will only mention here certain sources of potential irritants which are often overlooked An employee encounters many other irritants besides those at his work he may be an amateur photographer or gardener he may have been doing some decorating at home or cleaning his motor cycle or even doing the household washing up consequently a man s home activities and hobbies should always be borne in mind The fault may not be in the material he handles at work but in the substance he uses afterwards for cleaning his hands The chemical worker may be using bleach or the painter using turpentine or some abrasive soap or it may simply be ordinary soap combined with the friction of scrubbing the skin A housewife may do other things besides her own housework as with a patient of mine who regularly visited her sick mother where she watered a primula plant

Time of onset

Too often it is assumed that because a man is handling an irritant this must be the cause of his dermatitis a careful history may show that it started when he was not in contact with the suspected irritant as for instance after a day s holiday and exposure to the sun It may be found that the attacks recur on a certain day of the week often at the week end this may enable one to correlate the attacks with some work done on that specific day such as cooking or cleaning a certain room or putting on a Sunday suit A careful history may also enable one to connect the onset of the dermatitis with the purchase of a new garment or the dyeing of an old one or a change of work

Site of onset

The doctor often sees the patient for the first time when the rash has spread widely and it is essential that he should determine exactly where the initial onset occurred A patient may have an extensive rash over the arms and upper trunk and it may only be after careful questioning that it is discovered that the rash started on

The test is performed by putting a drop of a suitable dilution of the suspected irritant on a piece of lint and applying it to normal skin usually on the upper arm or back A second piece of lint is used as a control With fabrics a small square (1 inch by 1 inch) should be used it is wise to place it on a larger piece of lint or Cellophane so that a normal zone of skin is left between that in contact with the test piece and that in contact with the Elastoplast or other adhesive The test is left on for 24 hours it is then removed but is not read for 15 minutes in order to allow any mechanical irritation to subside The skin should be examined again after 24 hours and 48 hours because sometimes the reaction only develops after a latent period With low sensitizing agents it may be necessary to leave the patch on



Fig 83 —Positive patch test to a chrysanthemum leaf

for 48 hours or even longer When several substances are being tested the skin should be carefully marked and the order of the test substances recorded to avoid mistakes Positive reactions may vary from a slight erythema lasting at least 24 hours (anything less should not be accepted as positive) to a vesicular or bullous lesion with widely surrounding erythema and occasionally a flare up of the primary lesion (Figs 83 and 84)

A positive reaction with proper precautions is always significant but a negative result does not necessarily exclude the test substance as the conditions of exposure under a patch test are less rigorous than exposure at work where friction and the like may play an adjuvant part

TREATMENT

The first thing is to remove the patient from the offending irritant This is usually easy with sensitizing agents though it may necessitate a man changing his job it is

Occurrence of dermatitis in others exposed to the same risk

This may sometimes be of such a uniform pattern that a diagnosis may be made at a glance, as happened with respirator dermatitis during the war It is of great importance in the diagnosis of industrial dermatitis though employees in those

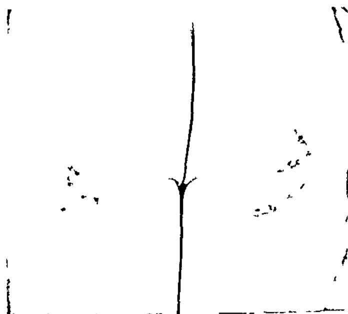


Fig 82 —Lavatory seat dermatitis due to varnish

processes with a well known hazard tend to blame their work for any skin eruption they may develop

Patch test

Confirmation of a suspected irritant may often be obtained by this test, it should only be used after a careful history has indicated what substance or group of substances is probably involved Many chemicals when applied to any skin in strong concentration will produce an erythematous or even a bullous reaction, it is therefore essential to use that strength of solution which will only affect those who are hypersensitive and not the normal person Tables are available (Sulzberger, 1943) giving suitable strengths for all likely irritants The test should only be performed when the acute phase of the condition has settled down and it should be used cautiously in those who have had a severe type of dermatitis Certain substances such as picric acid *para* phenylenediamine (an ingredient in many hair dyes) chromates and primula leaves may not only cause a very fierce local response but the patient may have a flare up of his original rash a general erythrodermia has been seen to follow a patch test with picric acid If such an agent is being used a considerable dilution should be employed and the test should only be left on for a few hours Usually, if a patient is sensitive in one area all his skin will be sensitive so that a patch test may be applied to any suitable area but occasionally the sensitivity may be limited to that part of the surface which was involved in the dermatitis

Pot Brom	10 gr
Tinct Nuc Vom	7 min
Sp Ammon Aromat	15 min
Inf Gent Co	ad ½ oz

Local

It is essential to avoid any application which may further irritate the skin In very acute cases wet dressings should be applied using weak lead acetate lotion silver nitrate solution ½–1 per cent or ordinary saline solution These dressings must be kept wet but at the same time must be allowed to evaporate in order to produce their cooling effect to do this they must be renewed every hour or so which entails considerable nursing They should not be covered by oiled silk or jaconet as these prevent evaporation and lead to maceration of the skin When the hands or feet are involved they may be dabbled for a quarter of an hour three times a day in 1 4 000 potassium permanganate or weak lead acetate lotion When the skin is weeping it may be dried by the following

Zinc Oxide
Talc
Glycerin
Lime Water equal parts

An alternative preparation is Siccolam ointment One per cent gentian violet has a similar effect but particularly on the hands it may seal in infection and lead to lymphangitis If the skin is just red calamine lotion is soothing but this very soon makes the skin dry and inclined to crack and if there is any exudate dressings become stuck to the skin and difficult to remove Usually the most acceptable dressing is one of lint soaked in an oily calamine liniment to which 1 per cent carbolic acid may be added if the itching is marked

When the acute phase has settled or if the eruption is of the chronic type an application with more covering power is required to protect the patient from irritation by friction and rubbing For this purpose a paste should be used in preference to an ointment as the latter interferes with the excretory function of the skin and patients often complain that it makes the skin feel hot Lassar s paste is very effective to which may be added 2 per cent of ammoniated mercury if there is any infection or 5–10 per cent of tar if the skin is very irritable If the paste is made with an emulsion base it will absorb secretions better and may be more easily removed The following is a useful formula

Liq Pic Carb (or Pix Carb Praep 20 gr)	30 min
Zinc Oxid	120 gr
Halden s Emulsifying Base	ad 1 oz

Pastes should be applied directly to the skin and sufficiently thick just to obscure it They should not be cleaned off except for periodic inspection by the dermatologist They should be covered with a light dressing and on the arms and legs an old silk or cotton stocking is very suitable At times it may be sufficient to powder the surface of the paste after application so that it does not stick to clothes In very resistant cases especially when the patient is scratching excessively the skin may be painted with crude coal tar or Unna s paste may be painted on and

more difficult when the dermatitis has been caused by primary irritants because these are so widespread Soap and allied substances are the commonest primary irritants, poor quality soap and soap powders containing free alkali are the most dangerous but even high quality soap will irritate many patients Super fatted soaps are no less irritating than ordinary soaps The so called acid soaps which are detergents containing wetting agents are better tolerated by many though owing to their degreasing action they sometimes produce dryness of the skin which must be



FIG 84 —Positive patch test to a nickel coin in patient with suspender dermatitis

corrected by applying an emollient For housewives who must do wet work rubber gloves may be helpful but they often cause sweating which macerates and irritates the skin this can be prevented by wearing cotton gloves inside rather large rubber gloves A less certain protection is a barrier cream such as one of the Innoxa series or Rozalex C which must be applied regularly before any wet work is done, once the skin has broken down a barrier cream is often of little value in preventing further attacks It is practically impossible to desensitize a patient who has once become allergically sensitized to a given substance The only successful results have been in cases of poison ivy dermatitis in which prolonged courses of suitable extract by mouth do seem to lower the skin s sensitivity However the improvement is usually only partial and temporary and the patient tends to break down again following further exposure

If the dermatitis is at all extensive the patient should be put to bed or at least be off work In extensive acute attacks an alkaline mixture should be given by mouth with suitable sedatives at night Aspirin 10 grains combined with phenobarbitone $\frac{1}{2}$–1 grain is often more effective than a sedative alone Antihistamine agents such as Anthisan 100–200 milligrams three times daily or Benadryl 50 milligrams three times daily will sometimes relieve the itching In very irritable eruptions, especially in highly strung patients the following mixture given three times daily before meals is of great value

that the speed of recovery is greatly influenced by the efficiency of treatment and the availability of such adjuvants as x rays The longer a patient has had his der matitis the slower will be his recovery ideally a case should never be allowed to become chronic

ACNEFORM DERMATITIS DUE TO OIL AND TO TAR PRODUCTS

A characteristic papular follicular eruption occurs in workers with mineral oils pitch and other tar products (Fig 85) It affects the areas directly exposed to the irritant usually the forearms and the fronts of the thighs where oil soaked trousers rub on the skin It is more common in male than in female operatives partly because men have larger hair follicles and partly because women wash their skin more thoroughly after work The spots are probably caused by a direct irritant action on the mouths of the hair follicles The primary lesions are discrete firm red papules about 2–3 millimetres in diameter with a little central dimple secondary infection readily supervenes leading to folliculitis and boils

Treatment and prophylaxis

The most important measure is thorough cleansing of the skin whenever poss ible and particularly after work This is best done with synthetic detergents such as Nesco and Stergene which emulsify the oil and remove it from the follicular orifices Barrier creams even though specially designed to resist oil are not very effective Much can be done to diminish the actual exposure to oil by the provision of splash boards impervious overalls and when feasible gauntlets and sleeves

Once the rash has developed the arms should be regularly swabbed with some suitable antiseptic such as perchloride of mercury 1 4 000 and even more care should be taken over washing off all the oil If the skin gets very sore a protective paste such as Lassar s paste should be applied If actual boils develop they should be treated along the usual lines and each boil should be painted with lotion of malachite green in order to prevent further infection In the majority of cases the man can continue at work but those with severe involvement should be moved to less oily jobs

Chloracne

A profuse acneform eruption chiefly consisting of typical blackheads occurs in workers handling chlornaphthalene bodies (Fig 86) These are used for insulating cables and exposure occurs when the insulation is being broken down in order to join two ends the effects are more marked when the work is done in a confined space such as a ship During the manufacture of these bodies exposure to fumes may cause serious liver damage The rash occurs particularly on the temples and may persist for months after exposure has ceased The treatment is that of ordinary acne

MELANODERMATITIS

This occurs in men who work for considerable periods with tar and allied bodies the most severe cases that have been seen have occurred in briquette workers sometimes after only a few months employment The man may complain first of

covered with cotton wool the excess wool being removed when the application has set firm

Directly the acute phase has disappeared, x ray treatment should be given if it is available A suitable dose is 150 r unfiltered at about 70 kilovolts and this may be repeated 2 or 3 times at 3-weekly intervals, some dermatologists prefer to give 70–100 r at weekly intervals for about 5 doses

PROGNOSIS

In general once dermatitis has developed continued exposure increases the severity of the attack Schwartz (Schwartz and Tulipan, 1939) believes that with continued exposure a patient may often develop immunity The author s experience is that this only occurs in a few industries where during the first 2 or 3 weeks a mild irritation of the skin may develop and later pass off apart from this if a patient contracts dermatitis further exposure does not produce desensitization but the reverse *A patient who continues at work with a dermatitis is liable to acquire* sensitivity to other substances in addition to the original irritant, his sensitivity is then described as polyvalent and the difficulty of avoiding further exposure is increased The outlook is better in cases of true sensitization than in those due to primary irritants With the former, removal of the patient from the irritant is usually followed by permanent disappearance of the rash provided that he avoids further exposure though he will probably remain sensitive to this substance for the rest of his life Occasionally removal may not be easy if the irritant is very ubiquitous, thus in the United States of America where poison ivy is widespread the patient who is sensitive to it may have difficulty in avoiding occasional contact With dermatitis due to primary irritants the outlook is much less favourable Here the skin has broken down because it is unduly vulnerable either by reason of *an inborn eczematous tendency or by reason of increasing age and years of ex*posure to irritants when so to speak, the skin has become worn out In these patients removal from work is often not followed by very marked improvement This occurs because in the eczema prone subject the external irritant has set going a process which is largely due to the patient s constitutional make up and is not necessarily *self limited, in the type which follows years of exposure to primary* irritants the skin has lost its resilience and may never regain its powers of resistance Further, cessation from work does not necessarily remove a patient from exposure to primary irritants which include soap and water and to some extent the action of heat and cold, and wind and sun It is however sometimes possible to build up the resistance of the patient s skin *till he can withstand a limited exposure to* primary irritants even though he would relapse if excessively exposed

Many other factors *influence the prognosis such as social status and the ability* to obtain alternative work or in the case of a housewife to hire help for the wet work The psychological aspect is of great importance particularly in industrial dermatitis when a workman is drawing compensation this latter gives him some degree of security which he is afraid to surrender and hence he has a more or less unconscious motive for prolonging *his dermatitis if the man is off work he has* nothing else to do but look at his skin all day so that it readily becomes an obsession and a *focus for* anxiety about his future earning capacity One need hardly add

soreness and redness of the face especially when exposed to bright sunlight With or without this he gradually develops brownish pigmentation of the face and hands and areas of friction and in severe cases may become almost black The skin becomes dry and scaling with follicular plugging hyperkeratotic papules and little warty growths Most of these so-called tar warts fall off but occasionally one will develop into a true epithelioma In long standing cases there may be signs of atrophy and fine telangiectasis

Alternation of work so that the employee is not exposed continuously to sun light out of doors will do much to reduce the incidence of severe cases but some pigmentation will develop sooner or later in all such workers and a regular inspection should be made for early signs of epithelioma

PHYTO PHOTO DERMATITIS

Phyto photo dermatitis or dermatitis bullosa striata pratensis is a vesiculo-bullous eruption which occurs when skin sensitized by contact with certain plants is exposed to sunlight It was originally described in sunbathers and during World War II was seen in soldiers who were stripped to the waist and in whom it was several times misdiagnosed as mustard gas burns It has been seen to develop in A T S cooks who had been preparing parsnips in the open air The plant which most commonly causes the eruption is the wild parsnip but it can occur after con tact with figs the common rue and certain citrus fruits such as limes The lesions have a bizarre and artificial appearance with vesicles arranged in a linear and criss cross pattern where the skin has come in contact with the offending plant The reaction may be very acute at first with considerable erythema surrounding the blisters but it rapidly settles down on bland treatment and the skin peels leaving pigmentation which may persist for many months

A closely related condition known as berlocque dermatitis may follow the use of eau de Cologne this contains oil of bergamot which is a photosensitizing agent The application of this to the skin in sunny weather may be followed by a transient erythema and later a more obvious and persistent pigmentation The eau de Cologne evaporates as it runs down the neck and becoming more concentrated leaves a pigmented track more marked at its lower end

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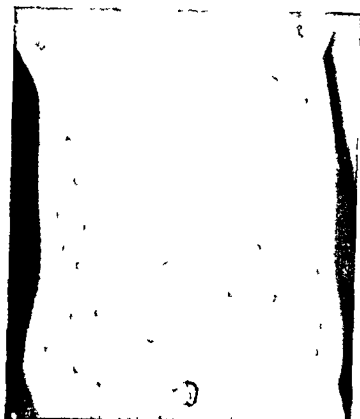


FIG 85—Oil acne of the trunk in a patient whose clothes got soaked in oil at work



FIG 86—Chloracne resulting from exposure to chlornaphthalene bodies Note profuse blackheads with a few larger papular lesions

and he is probably wisely excluded from skin hazards as are those suffering from parasitic infection of animal or vegetable origin and the microbic infections The subjects of malignant and sometimes of the benign skin neoplasms should be excluded from work which involves contact with the skin carcinogenic agents encountered in industry—these agents include tar pitch bitumen mineral oil paraffin or any compounds product or residue of any of these substances Pitch or tar warts which have been successfully treated do not necessarily constitute a bar to further employment involving contact with these substances provided there is medical supervision

Any person with an ichthyotic condition of the skin requires special consideration for placement and contact with degreasing agents such as petrol trichlorethylene carbon tetrachloride paraffin and methylated spirit should be avoided The sufferer from milder degrees of ichthyosis may do well in contact with mineral or vegetable oils but care in placing should always be exercised if there are skin fissures as these are liable to become infected under working conditions Hyper idrosis requires different conditions and it is probably not mere chance that one finds many sweating hands among french polishers and bakers who have not proved dermatological casualties

Value of patch test

Patch testing with strict attention to the technique of this procedure and to the correct dilution of the skin irritant under test has a somewhat limited value in the selection of personnel for work whenever there is a specific dermatitis hazard for it is not possible to reproduce exactly in any practicable test the anticipated exposure (together with the unforeseen circumstances) so that while a negative patch test is not by itself conclusive positive tests might lead in some instances to unjustifiable restrictions Schwartz Tulipan and Peck (1947) do not advocate pre employment patch testing either with allergens unrelated to those the worker will encounter in the course of his occupation or those with which he will work the pre employment patch test has not the same status as the diagnostic patch test In the latter case the patient submits to it as a diagnostic procedure in the former the healthy applicant for a job is forced to submit to it in order to qualify The authors also take the view that if the applicant is rejected or discharged following pre employment patch testing he has reasonable grounds for claiming that he was sensitized by the pre employment patch test to something to which he was not before sensitive

If there is any serious doubt as to the suitability of a candidate for work with an occupational skin hazard his initial exposure should be one of minimal contact which is discussed later

PROTECTION OF WORKERS

Protection should come into operation as soon as work with a skin hazard starts and it is very wide in its applications Something more is required than the protection provided by special clothing in the shape of gloves aprons and boots when these are deemed necessary or even the essential mechanical protection afforded by satisfactory environmental conditions of work ranging from general measures such as reasonable standards of temperature and ventilation to the more

CHAPTER 8

INDUSTRIAL DERMATITIS, WITH SPECIAL REFERENCE TO PREVENTION, RECURRENCE AND PROGNOSIS

SIBYL HORNER

INFLAMMATION of the skin caused by irritants met with in industry (which has a wider meaning than factories alone) has accounted for most of the compensatable industrial disease in Great Britain if certain conditions which are mainly confined to miners are excluded In addition to the economic factor and the loss of man power there is the individual suffering with which is associated uncertainty with regard to the capacity to return to the previous occupation or, indeed to any occupation at all by reason of the risk of a recurrence of the skin disease When it is realized that a large proportion of occupational dermatitis is preventable, the importance of this aspect needs no further emphasis

A study of occupational dermatitis has led to an appreciation of the importance of certain basic preventive measures which may be summarized under the headings of selection protection inspection and cleanliness

SELECTION OF PERSONNEL

Selection involves the choice so far as is reasonably possible of the most suitable personnel for work with which there is a dermatitis hazard This screening of personnel is best done by a dermatologist who in addition to his specialist knowledge should have a good working understanding of occupational processes with regard to the associated dermatological hazards Consideration should be given to a history of eczema or dermatitis whether or not it has occurred during occupation The risk of recurrence, which is dealt with later, must be given careful consideration but a history of dermatitis is not by itself necessarily a cause for rejection or restriction of employment A knowledge of the circumstances of the previous attack will assist a decision and it is helpful to remember that oil folliculitis should not recur if reasonable precautions are taken The presence of skin disease in a candidate for work in which there is a dermatitis hazard might seem at first sight to rule him out but much will depend on the pathological condition present, the part of the body involved, the occupational hazard of the work contemplated and the amount of contact necessary with skin irritants, to which might be added the extent to which the individual concerned can or will co operate in preventive routine It has been held with some justification that seborrhoea of any part of the body, with the exception perhaps of the scalp and fungus infections predispose to the dermatoses of occupation acne vulgaris would seem to be a condition possibly unsuited for exposure at work to agents such as mineral oil pitch, tar and the chlorinated naphthalenes which give rise to acneform eruptions on the exposed parts of the skin The patient suffering from psoriasis presents peculiar problems

and he is probably wisely excluded from skin hazards as are those suffering from parasitic infection of animal or vegetable origin and the microbic infections The subjects of malignant and sometimes of the benign skin neoplasms should be excluded from work which involves contact with the skin carcinogenic agents encountered in industry—these agents include tar pitch bitumen mineral oil paraffin or any compounds product or residue of any of these substances Pitch or tar warts which have been successfully treated do not necessarily constitute a bar to further employment involving contact with these substances provided there is medical supervision

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specific measures which aim at minimizing contact with irritant materials One of the best ways of securing minimal contact is the substitution in the process whenever it is possible of a harmless or less irritating substance Schwartz Tulipan and Peck maintain that the ideal means of prevention is to safeguard industrial operations in such a way that injurious chemicals cannot come in contact with the skin'

The Australian Department of Labour and National Service reporting in 1944 upon the war time incidence of tetryl dermatitis in two fuse filling factories found that the risk of contracting tetryl rash was lowest during the summer months of January and February and that it was an advantage to engage new employees during that period so that they might pass through a period of skin sensitivity and become desensitized (or develop a suitable standard of personal hygiene) before the high seasonal incidence occurred Accepting the probability that contact with tetryl produced a sensitivity during the early period of service and that this was followed by skin desensitization it was recommended that during the first two months of service workers should be employed on jobs of low contact intensity During this period there was education in the routine methods of prophylaxis and personal hygiene and if under these conditions a rash was contracted it would probably not be severe Evidently in Australia it had been usual previously to place new operatives in work involving a high dermatitis risk in order to determine quickly their susceptibility

One firm in Great Britain with a limited personnel to call upon and a skin hazard from mepacrine placed new workers after a preliminary medical examination on non contact work in a mepacrine department If no skin irritation resulted work on processes followed starting on those processes with the lesser degrees of skin hazard With this procedure the skin affections were few and mostly of low severity Obvious ways of minimizing contact with skin irritants include the substitution of mechanical for hand methods If the process does not lend itself to complete mechanization mechanical aids such as the use of tongs, scrapers and dipping trays may give a measure of protection General ventilation to reasonable standards is of importance when there is a dermatitis hazard for extremes of temperature and high humidity render the skin more susceptible, while localized mechanical exhaust ventilation will do much by eliminating dust or fume to make the process less of a dermatological hazard In extreme cases nothing short of enclosure of the process will control the skin risk

Clothing

Protective clothing is more often designed to give protection to the workers own clothing than to prevent skin disease and unless it is specifically designed for the latter purpose and is adequately maintained to a high standard of efficiency it will not only fail to prevent but may possibly initiate skin irritation Industrial gloves, as a protection against skin contact with irritants need particular consideration both with regard to their material their length and the period of time for which they are intended to be worn Some industrial gloves do not in fact prevent access to the skin of the irritant against which they are intended to be a protection and rubber gloves because of the sweating they induce should be reserved for processes in which there is a high skin hazard which cannot otherwise be controlled

Barrier substances

Barrier substances applied to the skin before work to reinforce the protective function of the horn cells themselves which with the natural secretions of the skin form the first line of defence against dermatitis are not a modern invention having their origin in the smearing of the skin with mutton fat or china-clay pastes a practice of the workers of bygone days Although some physical or more rarely some chemical protection may be given to the skin one of the most practical uses of barrier preparations is the relatively easy removal of the signs of toil including staining of the skin which they particularly those containing soap make possible In a few cases as in work with pitch the well designed barrier preparation may prevent or allay irritation of the skin known as pitch smarts which otherwise is experienced by newcomers to the industry especially with exposure to sunlight This rather specialized function of barrier preparations recalls the use of turmeric powder bases as a protection against the actinic rays of the sun but there is more to it than this alone There is evidence that under the influence of ultra violet light some substances such as tetryl and possibly pitch undergo chemical changes enhancing the dermatitis hazard or the skin carcinogenic hazard

The use of barrier creams increased during World War II this was a natural development intensified by the needs of war and by the influx of women many of whom had been previously unemployed into industry The fact that the use of barrier preparations was only part and a small part of the protective cycle against dermatitis was apt to be overlooked in the desire to adopt any measure which claimed to defeat industrial dermatitis At this time too many manufacturing chemists some of whom had experience of cosmetic production entered the field and the choice of a barrier preparation suited to a specific skin hazard became more complex

Essentials of barrier substances

Barrier substances to be reasonably successful must satisfy certain criteria which are stated below

(1) They should be non irritating *to the skin* for preparations with a *p*H much above or below that of the skin about 5 5 to 6 5 are liable to be irritating and so are many antiseptics dehydrating and degreasing *agents*

(2) An important factor is insolubility in such substances as oil, methylated spirit and turpentine against which skin protection is specifically required This criterion will require a range of formulae for barrier substances in different circum stances A simple method of testing is to spread a thin film of the barrier substance under consideration on a clean glass *plate* and allow it to dry preferably at skin temperature The dried film should *then be transferred* to test tubes containing the specific irritant against which skin protection is desired Examination at inter vals will show whether solution *is taking place* the severity and scope of this test can be varied as desired Other more complicated tests for the evaluation of barrier creams have been described by Sadler *and Marriott* (1946) Their conclusions were however that the final arbiter of quality *must rest* on the clinical testing of the creams Some interesting work on barrier creams and their evaluation particularly in the prevention of dermatitis from tetryl and *trinitrotoluene* was done by

Cumming and his colleagues (1947) during World War II It was suggested that the ideal barrier cream would be a material of the appropriate physical form and composition in which the nitro bodies would be insoluble and the degree of absorption of the barrier by the skin would be at a minimum Twenty five barrier creams in use were tested, and with only two exceptions there was penetration by both trinitrotoluene and tetryl in one hour Based on estimations of solubilities of trinitrotoluene and tetryl in the common ingredients of barrier creams a new barrier known as the Camraild barrier was evolved consisting of paraffin wax (20 per cent) Vaseline (40 per cent) Lanette Wax SX (10 per cent) and water (30 per cent) The value of this cream is limited by its greasy nature

(3) There should be ease of application to the skin where the substance should be relatively unaffected by the movements and unpenetrated by the contacts of work

(4) It should be non sticky so that interference with necessary work will be negligible

(5) A further essential is easy removal of the cream after work by the ordinary procedure of washing and without the aid of special cleansers

Grades of barrier substances

Three grades of barrier preparations are generally available the first is water proof, for use where protection is desired against water aqueous solutions of chemicals or water soluble agents such as soluble oils the second oil proof (straight oils) is generally solvent proof as well that is it will withstand the action of industrial solvents the third non toxic, is for use in processes in which in addition to a dermatitis hazard there is a toxic hazard from absorption through the skin Examples of this type of work occur with trinitrotoluene dinitro orthocresol, aniline and aniline bodies (which include nitrobenzene) and with some of the carcinogenic agents met with in industry such as benzanthracene *alpha* and *beta* naphthylamine and the more common pitch and tar There is some evidence that the presence of lanolin in a barrier preparation may promote skin absorption whether or not this is substantiated great care must be exercised in the composition of barrier substances when there is a toxic hazard for otherwise they may actually aggravate the systemic effects of the poison while the local effect on the skin may in some cases be a grievous one The fact that some industries predominantly the food manufacturing ones utilize fat or material to which perfume clings is the reason for including in the range of barriers a non scented preparation, which may be either of the first two types mentioned above It is important however appropriate a barrier preparation may seem pharmaceutically and by laboratory tests that it should be acceptable to the worker for if it is not so the barrier preparation will fail in its object because of non usage or irregular usage Acceptability from the workers angle will require a good skin tint a quality not incomparable with that of the better cosmetics and an attractive but not heavy perfume It should be remembered that perfumed barriers which appeal to women are not necessarily acceptable to men Ease of application before work and easy removal after work even with a scanty soap ration are important points from the workers angle In the evolution of a barrier cream there should be three distinct stages pharmaceutical, which will include tests for aging and for the detection of mould growth

efficiency tests on a laboratory scale and finally the field tests when the barrier preparation is actually used under controlled conditions in factory processes

Effectiveness

Even when properly formulated and applied barrier creams are probably less effective as a preventive of dermatitis in the case of mineral oil than with some other skin irritants especially those such as synthetic resin glues french polish aircraft dope and other paints which are difficult to remove by the ordinary washing procedure without the use of barriers The first legal requirement for the provision of a barrier preparation was in the Patent Fuel Order 1944 reissued in 1946 as Special Regulations for the Manufacture of Patent Fuel Experience has yet to be gained as to how successful a barrier cream may be when its provision is compulsory Moreover the skin hazards against which protection is required in the patent fuel industry are twofold dermatitis and epitheliomatous ulceration—a later manifestation

During World War II the experience of the Royal Ordnance Factories in which the issue of barrier creams was carefully organized was very favourable but a somewhat elaborate procedure only suitable for women workers was found necessary to put it across However as public interest in the prevention of industrial dermatitis is focused on barrier preparations the value of which in certain circumstances must be acknowledged it may be desirable to include them in any compulsory measures directed towards the prevention of dermatitis in industry

The majority of barrier preparations in use at present in industry are of proprietary manufacture and discussion on the relative merits of named brands is therefore undesirable The Pharmaceutical Society of Great Britain is investigating the determination of formulae for barrier preparations suitable for inclusion in the *British Pharmaceutical Codex* This work was undertaken at the suggestion of the Advisory Panel on Dermatitis in Industry set up by the Minister of Labour and National Service

IMPORTANCE OF INSPECTION

Inspection is the third of the basic measures for prevention of dermatitis in industry and of all these measures it is perhaps the key pin for by inspection the degree of success of the other precautions can be estimated and early treatment with all its advantages be made possible Inspection of personnel on work carrying a dermatitis or skin hazard undoubtedly is best done by a doctor with industrial experience It can also however be effective if performed by an industrial nurse a well trained first aid attendant or an *intelligent supervisor* It is important that inspection should be carried out on the plant during the ordinary course of working and it should reveal then not only the early signs of skin irritation when there is a very good chance of cutting short the attack by appropriate means but also the effectiveness and use that is being made of other protective measures not omitting those provided by early first aid treatment of all injuries however trivial since dermatitis not infrequently has its origin in the improperly treated or neglected effects of trauma and subsequent infection

Cumming and his colleagues (1947) during World War II It was suggested that *the ideal barrier cream would be a material of the* appropriate physical form and composition in which the nitro bodies would be insoluble and the degree of absorption of the barrier by the skin would be at a minimum Twenty five barrier *creams in use were tested and with only two exceptions* there was penetration by both trinitrotoluene and tetryl in one hour Based on estimations of solubilities of trinitrotoluene and tetryl in the common ingredients of barrier creams a new barrier known as the 'Camrald barrier was evolved consisting of paraffin wax (20 per cent) Vaseline (40 per cent) Lanette Wax SX (10 per cent) and water (30 per cent) The value of this cream is limited by its greasy nature

(3) There should be ease of application to the skin where the substance should be relatively unaffected by the movements and unpenetrated by the contacts of work

(4) It should be non sticky so that interference with necessary work will be negligible

(5) A *further essential is easy removal of the cream after work* by the ordinary procedure of washing and without the aid of special cleansers

Grades of barrier substances

Three grades of barrier preparations are generally available the first is water proof, for use where protection is desired against water aqueous solutions of chemicals or *water soluble agents such as soluble oils*, the *second oil proof* (straight oils), is generally solvent proof as well, that is it will withstand the action of industrial solvents, the third non toxic is for use in processes in which in *addition to a dermatitis hazard there is a toxic hazard from absorption through* the skin Examples of this type of work occur with trinitrotoluene, dinitro orthocresol aniline and aniline bodies (which include nitrobenzene) and with some of the carcinogenic *agents met with in industry such as benzanthracene alpha* and *beta* naphthylamine and the more common pitch and tar There is some evidence that the presence of lanolin in a barrier preparation may promote skin absorption whether *or not this is substantiated great care must be exercised in the composition* of barrier substances when there is a toxic hazard for otherwise they may actually aggravate the systemic effects of the poison while the local effect on the skin may *in some cases be a grievous one The fact that some industries predominantly* the food manufacturing ones, utilize fat or material to which perfume clings is the reason for including in the range of barriers a non scented preparation which may be either of the first *two types mentioned above It is important* however appropriate a barrier preparation may seem pharmaceutically and by laboratory tests that it should be acceptable to the worker for if it is not so the barrier preparation will fail in its object because of non usage or irregular usage Acceptability from the workers angle will require a good skin tint a quality not incomparable with that of the better cosmetics, and an attractive but not heavy perfume It should be remembered that perfumed barriers which appeal to women are not necessarily acceptable to men Ease of application before work and easy removal after work even with a scanty soap ration are important points from the workers angle In the evolution of a barrier cream there should be three distinct stages pharmaceutical which will include tests for aging and for the detection of mould growth

efficiency tests on a laboratory scale and finally the fi ld tests when the barrier preparation is actually used under controlled conditions in factory processes

Effectiveness

Even when properly formulated and applied barrier creams are probably less effective as a preventive of dermatitis in the case of mineral oil than with some other skin irritants especially those such as synthetic resin glues french polish aircraft dope and other paints which are difficult to remove by the ordinary washing proce dure without the use of barriers The first legal requirement for the provision of a barrier preparation was in the Patent Fuel Order 1944 reissued in 1946 as Special Regulations for the Manufacture of Patent Fuel Experience has yet to be gained as to how successful a barrier cream may be when its provision is compulsory Moreover the skin hazards against which protection is required in the patent fuel industry are twofold dermatitis and epitheliomatous ulceration—a later manifestation

During World War II the experience of the Royal Ordnance Factories in which the issue of barrier creams was carefully organized was very favourable but a somewhat elaborate procedure only suitable for women workers was found necessary to put it across However as public interest in the prevention of industrial dermatitis is focused on barrier preparations the value of which in certain circumstances must be acknowledged it may be desirable to include them in any compulsory measures directed towards the prevention of dermatitis in industry

The majority of barrier preparations in use at present in industry are of pro prietary manufacture and discussion on the relative merits of named brands is therefore undesirable The Pharmaceutical Society of Great Britain is investigating the determination of formulae for barrier preparations suitable for inclusion in the *British Pharmaceutical Codex* This work was undertaken at the suggestion of the Advisory Panel on Dermatitis in Industry set up by the Minister of Labour and National Service

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CLEANLINESS

To complete the cycle of preventive measures there is no other more important than cleanliness made possible by the use of well designed and conveniently placed washing accommodation for in general terms the effect of a skin irritant is in direct ratio to the duration and amount of contact Recognition of the value of cleanliness, *with which must be coupled* arrangements for a change of soiled clothing before going home will do more than any other single factor to diminish risks which are in some cases serious and prolonged attendant on contact with the skin of the irritants of occupation Whatever may be the skin irritant encountered at work, it must not be allowed to remain on the skin even with the intervention of a barrier substance when work is over The usefulness of well designed washing accommodation, with the necessary accompaniments of hot water soap and clean towels *will be enhanced if the accommodation is placed in the charge of a responsible* person and under the supervision of the industrial nurse It is important that sufficient washing space should be provided for the numbers employed In work rooms in which dermatitis is likely to occur not less than one wash basin or 2 feet of trough space, for every 12 persons should be the minimal standard when poisonous materials are handled not less than one wash basin has to be provided for every 5 persons so employed, and this is none too many where there is a dermatitis risk Washing facilities should be provided in the work rooms in addition to those associated with cloak rooms and lavatories Opportunities for bathing including shower baths, should also be arranged whenever the work is hot and dirty, or when there is a considerable risk of dermatitis and if as it should be, working clothing is discarded before leaving the factory bathing facilities help to attain the desired end

The use of soap as a cleansing agent may not be sufficient in itself to rid the skin *of harmful material and there may be resort to cleansers often of an alkaline and* gritty nature which may themselves damage the skin When there has been contact with pitch and tar as a preliminary to washing with soap and water, the use of a vegetable oil such as rape oil has been found useful while a neutral sulphonated castor oil to which has been added one per cent of a wetting agent will help to rid the skin of mineral oil as will a cleanser of fine wood flour and powdered soap (Cruickshank 1948) French polishers customarily wash in soda water to remove staining from the skin this soda water should be of as weak a strength as is compatible with efficiency about 1 pound of washing soda to 2 gallons of water, and as with most other cleansers the final washing should be with soap and water Because of the long term risk of skin cancer from mineral oil and from coal tar products *effective daily cleansing of the skin is of special importance*

PROGNOSIS

Prognosis of industrial dermatoses is so bound up with the question of recurrence that the two may be considered together There is as a rule little difficulty in curing a first attack of industrial dermatosis in its early stages and if contact with the agent or agents responsible has ceased The longer such contact continues after the onset of skin irritation, the slower is the recovery and the greater is the risk of

recurrence The immediate prognosis therefore is good unless other factors such as previous attacks abnormalities of the skin or old age are present Macleod (1933) held that provided further exposure to the irritant be avoided and suitable treatment be adopted the eruption usually runs a short course and complete healing rapidly takes place followed perhaps by transient pigmentation Each subsequent attack of industrial dermatitis usually tends to run a longer course Recognition of the risk of recurrence must be taken into account in the prognosis From analysis over 3 years of the voluntarily reported cases of dermatitis which were not first attacks there was evidence that the risk of recurrence was highest in woodworkers followed by bakers flour confectioners chemical workers dyers and calico printers sugar confectioners letterpress printers and engravers An analysis over the same 3 years of the ages of those who had had a previous attack or attacks of dermatitis showed that the highest rate of recurrence occurred in the age group 21–30 years followed by those over 50 years of age The number at risk in the first age group will out number those in the older age group

The best prevention of recurrence of industrial skin disease lies in early recognition combined with treatment that does not itself promote sensitization Rehabilitation with as its highest objective return to the original work is now recognized as being of major importance A resumption of previous contact should only be made with the full appreciation and use of protective measures After one attack of dermatitis a greater appreciation by the sufferer of the dangers and an increase in caution may explain some of the instances of so-called acquired immunity to certain skin irritants As a rule as Thomas (1937) has pointed out sensitivity to an irritant once established persists and a skin which has acquired sensitivity to one irritant may as a result be sensitive to other related or non related irritants If in spite of care a second attack of dermatitis arises from the original irritant it is then best to avoid such contact in the future It may be found that the worker is not only affected by the original irritant but by a wide group of allied substances The sensitizing skin irritants are more likely to cause a recurrence than the primary irritants White (1934) thought it must be accepted as a general rule that once skin was sensitized to the comparatively few agents which caused this phenomenon the sensitivity remained while it was his experience that a healthy man with a healthy skin which has quite recovered from the former disturbance can revert to the original labour without fear of relapse Recurrences he believed were due to imperfect convalescence inborn or acquired personal idiosyncrasy an unnoticed patch of eczema seborrhoea hyperidrosis or some of the undefined ailments called lowered vitality caused by improper feeding or drinking gross neglect or carelessness

Oil dermatitis of the follicular type is not often disabling and should disability occur a return to the original work can be advised provided full precautions are taken especially the thorough cleansing of the skin from oil after work The same cannot be said however with regard to the rarer manifestations of oil dermatitis of the eczematous type unless contact with the offending constituent in the oil can be modified or eliminated

There seems no proof at present that when specific desensitization treatment has been undergone the general principles set out above of prognosis and recurrence of the industrial dermatoses can be modified

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The psychological aspect

No discussion on the prognosis of industrial dermatitis would be complete with out a recognition of the psychological aspect of this condition The worker who sustains an attack of dermatitis is generally aware of the implications of the condi tion He knows that his capacity to do and retain his work is at risk He knows from the experience of other workers of the chances of a recurrence He worries and *scratches and scratches and worries* Whether or not he seeks treatment in the early stages he may experiment at home with some much advertised patent ointment which is quite likely to aggravate his condition As with most skin diseases there is in the industrial sufferer some degree of the leper complex reaction The mental attitude of the sufferer from industrial dermatoses must be taken into consideration from the outset It is claimed by Halliday (1944) and supported by Robertson (1947) that there is a peculiar state of mind which is a *predisposing factor in the causation of industrial dermatoses* and there is no doubt that a poor state of nutrition, anxiety not necessarily associated with a specific reason and home conditions which are not comfortable for one reason or another tend to heighten the susceptibility of the skin to external irritants

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CHAPTER 9

ALLERGY IN DISEASES OF THE SKIN

DAVID HARLEY

INTRODUCTION

THE CONCEPTION of altered reactivity or allergy is one that is being widely—and at times wildly—applied to medical problems at the present day Though much of the confusion and conflict of opinion which surround the subject is due to our ignorance of the fundamental principles involved this is in no way lessened by the multiple and somewhat erratic nomenclatures employed for the various types of allergic phenomena and by the different interpretation of the same term by the clinician and the pathologist The well known story of the indignant doctor from Ohio who came all the way to a Congress of Allergy in London in order to pour forth his views on asthma and then found to his disgust only Frenchmen and Germans talking about tuberculosis is a case in point

Von Pirquet defined allergy as the altered capacity for reacting which follows disease or treatment with a foreign substance Though von Pirquet had in mind particularly the hypersensitivity of infection and serum disease he appears to have included spontaneous hypersensitivity of the hay fever type as well As his original definition did not specify the direction in which the change of reactivity takes place the term may be taken to include all forms of acquired immunity in addition to hypersensitivity The term allergy being invested with such an all embracing meaning the word in itself conveys but little or rather its vastness prevents any attempt at a precise definition

In contrast to the fundamentalist view is the tendency due mainly to American clinicians to narrow down the meaning to designate the hypersensitivities of the asthma hay fever eczema urticaria group This latter interpretation does not help matters much however as the term allergy has been firmly established by pathologists in connexion with the hypersensitivity of infection in man and animals the mechanism of which is different from that of the asthma group Attempts to avoid this ambiguity have resulted in a flood of terms to describe the asthma group thus we have to mention but a few *atopy* (Coca) *hyperergy* (Schick) *attack diseases* (Aschoff) and *toxic idiopathies* (Freeman) The tendency of many in the profession today is to extend the popular American usage and apply the term allergy to all those conditions in man which are believed to be expressions of a state of increased reactivity irrespective of the nature of the mechanism by which they are actuated Indeed the writer recently heard a distinguished physician describe as allergic the lowered tolerance to morphine of patients with liver disease It seems likely that the term allergy would itself have been dropped long since had it not been for the strong general feeling that a word so beautiful must mean something and perhaps that is the main reason why allergy has come to stay

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It therefore seems necessary to provide definitions of the terms employed before they can profitably be used in discussion The following classification is not claimed to be a complete one but it has the merit of relative simplicity, it has been found to be convenient and helpful, and will be generally acceptable by allergists

DEFINITIONS AND TERMINOLOGY

Hypersensitivity

The term hypersensitivity (which is synonymous with hypersensitiveness sensitivity, and sensitiveness) is used in the broad immunological sense to include all forms of *specific* increased reactivity in man and the lower animals which are considered to be mediated by special mechanisms This excludes the condition known as intolerance, which is due to a quantitative increase of normal physiological response For example, a patient who exhibits tinnitus and deafness after a normal dose of salicylate—an exaggeration of the normal pharmacological action—is said to be intolerant but an individual who develops bronchospasm or urticaria after a small dose of the same drug is said to be hypersensitive—the reaction is violently increased and is qualitatively abnormal

Hypersensitivity is divided into (i) anaphylaxis, and (ii) allergy

Anaphylaxis

Anaphylaxis with which we are not primarily concerned here may be defined as those forms of hypersensitivity—readily demonstrable in the lower animals—in which the sensitive state is induced and not spontaneous is not influenced by heredity is readily induced in the majority of individuals of the susceptible species and in which an antigen antibody reaction has been demonstrated Contrary to popular opinion anaphylaxis has not been conclusively demonstrated in man with the doubtful exception of serum sickness which however is retained in the allergy group chiefly for the reason that it was one of the conditions von Pirquet had in mind when he coined the word allergy So called anaphylactic shock in man is usually allergic shock

Allergy

By allergy is generally meant the various forms of hypersensitivity exclusive of anaphylaxis This appears to be in accordance with its current usage (Editorial 1930) The term is less easy to define positively and is indeed incapable of a concise positive definition at present because it contains a number of subdivisions which exhibit few if any common characteristics other than the general one of specific hypersensitivity Allergy includes such apparently unrelated conditions as (i) hay fever which appears spontaneously in a small proportion of the population has never been induced and is subject to hereditary influences and (ii) serum disease which is readily induced in over 80 per cent of individuals and is not subject to heredity

It may well be however that as our knowledge of the basic mechanisms of the various types of hypersensitivity begins to emerge from the present mist of ignorance, the fundamental unity of all forms of hypersensitivity—animal and human—will become apparent

TYPES OF ALLERGY

At least four main subdivisions of allergy have been recognized (Coca Walzer and Thommen 1931) and are clearly separable from one another in respect of their aetiology and pathological mechanisms (Table I)

TABLE I

CLASSIFICATION OF FOUR MAIN TYPES OF ALLERGY

Hypersensitivity	Anaphylaxis	
	Allergy	1 Hereditary allergy group (asthma hay fever eczema urticaria etc)
		2 Allergic contact dermatitis
		3 Bacterial allergy
		4 Serum disease and drug allergy

Hereditary allergy group (synonyms atopy, toxic idiopathies)

This group includes those forms of hypersensitivity that do not occur so far as is known in the lower animals and which are subject to hereditary influences Some of them (for example hay fever) are characterized by skin reactions of the immediate type the state of sensitivity is passively transferable to normal individuals by the injection of serum from the sensitive person through the mediation of special sensitizing antibodies in the serum and the chief pathological basis of their manifestations is spasm of smooth muscle and increased permeability of blood capillaries Other forms such as angioneurotic oedema urticaria and gastro intestinal allergy frequently fail to give positive reactions to skin tests they are included in this group however because of their hereditary nature and of their clinical and pathological relationship to the hay fever type

The clinical variations in this group are considered to be due more to the route by which the particular reaction exciting substances gain access to the sensitive tissues and to the degree of sensitivity of the various tissues than to any fundamental immunological differences In hay fever the symptoms are chiefly nasal the comparatively large pollen grains being filtered out of the inspired air to a great extent in the nose In horse asthma the finely suspended particles of horse dandruff reach lower down and bronchial symptoms may predominate In food allergy we have gastro-intestinal symptoms with or without symptoms in distal tissues depending upon the amount of specific irritant absorbed into the blood stream In any one of these types the injection of the specific irritant parenterally may produce asthma hay fever urticaria and so on simultaneously as occasionally happens in hay fever for example when an overdose of pollen extract is given in the course of desensitization treatment

The test for this type of allergy is the dermal test the response is the immediate reaction of the well known weal and erythema type the shock tissue—site of action—is the blood vessels of the upper cutis

The specific reaction-exciting substance or allergic antigen is variously designated allergen atopen or idiotoxin depending upon the system of nomenclature favoured and the corresponding allergic antibody (though it is doubtful whether this is an antibody in the usual meaning of the term) is named the allergin reagin or idioceptor The expressions idiotoxin and idioceptor can be recommended as having the

advantage of being more or less self-explanatory though unfortunately their usage has been confined to Freeman s school and has not achieved a wide vogue for the reason that to date Freeman s school has consisted almost exclusively of the present writer Be this as it may there is undoubted clarity in the terms (a property sadly lacking in many other current nomenclatures) and furthermore they would be capable of easy extension—anti idiotoxin idiotoxoid and so on—should such terms ever be needed In the present flux of preferences and probably by the familiarity of long usage the merits of the following definitions appeal to the writer *Allergen* should be employed as the generic term for the allergic antigen in all types of allergy and until our present ignorance begins to lessen, little advantage seems apparent in dropping *allergic antibody* as a generic term for the antibodies active in all groups since the more classical term allergin has proved to be almost universally unpalatable When it is required to differentiate the special allergen and the corresponding allergic anti body active in allergy Group I the terms *idiotoxin* (atopen) and *idioceptor* (reagin) are recommended

As a matter of fact there is a second antibody involved which seems to be connected more with the mechanism of specific desensitization and of which the precise immunological nature has not yet been established (The few workers who have studied it have in most instances invented names of their own for it such as blocking antibody (Cooke and his colleagues 1935) immune thermostable antibody (Loveless 1940) and the rather cumbersome reaction inhibiting substance (Harley 1937a))

Generally speaking the allergens (idiotoxins) in this group are of a protein nature and include bacterial products though it must be admitted that the latter usually fail to elicit the immediate skin reaction characteristic of the group This may be due to failure to prepare suitable bacterial allergens for the purpose of the test The usual type of positive reaction to a bacterial vaccine or nucleo protein solution is a delayed inflammatory response, but this is more characteristic of the bacterial allergy group which will be considered below

The reaction of the sensitive skin to the specific allergen is similar to if not identical with, the reaction of the skin to histamine (Lewis 1924 1926 and 1927) Lewis s researches indicate that a substance (H substance) which is either histamine or a histamine like substance is liberated from the sensitive cells by the action of the allergen and that it is the H substance which produces the actual changes in structures such as the blood vessels which constitute the allergic reaction He also showed that the reaction of the skin to a number of other forms of injurious stimuli—mechanical thermal and electrical—was likewise due to the liberation of H substance

In 1927 Best and his colleagues demonstrated the presence of histamine as a normal constituent of the skin and certain other tissues and Dale (1929) suggested that the allergic reaction was due to the liberation of histamine present in the skin cells the union of allergen and allergic antibody on or in the cells acting like other injurious stimuli The liberation of histamine by the cells is the result of damage to them and the allergic reaction is simply the expression of cellular damage produced by the special method of allergen allergic antibody union

The major types of allergic dermatoses which come into this allergy group are allergic eczema (intrinsic allergic dermatitis and neurodermatitis) and urticaria In both conditions the primary shock tissue is the blood vessels of the upper cutis

and in eczema there is considerable evidence to suggest that the epidermal changes which characteristically occur are secondary to oedema of the upper cutis It is generally believed that the immunology and the primary histopathology of both weal and eczema are identical (Bray 1931) and that the development of these characteristically different lesions depends upon whether the allergen achieves relatively sudden and complete contact with the shock tissue (urticaria) or whether a more continued stimulus takes place or is repeated before the effects of the previous excitations have had time to disappear (eczema) Certainly both reactions do occur clinically to the same kind of allergens and either may be produced in different persons by the same allergen The allergic antibody of eczema will passively sensitize the normal skin but when the site is tested a weal is produced and not an erythematous patch

On the other hand some authorities notably Cooke (1947) deny that skin sensitizing antibodies of the immediate weal type (idioceptors) have either diagnostic or immunological import in allergic eczema though in the present writer s view this opinion is against the general run of clinical experience

The evolution of the allergic state can be divided into three stages as follows

Predisposition

The predisposition of the individual to become hypersensitive is commonly *inherited* but may also be acquired the exact nature of the underlying biochemical or immunological kink is unknown

Development of hypersensitivity

In the second stage hypersensitivity to one or more of a *wide variety of foreign*—or even endogenous—substances develops Contact with the offending substance (allergen) then results in the violent reactions characteristic of the allergic state Though hypersensitivity is *developed* commonly to substances with which the individual came into *close and repeated* contact before the allergic condition developed this is by *no means constant* and the capriciousness of the selection of the substance or substances to which the individual becomes sensitized is well known When the allergic state is first established the clinical specificity of the reaction is usually *very definite* for example the milk sensitive child reacts to cow s milk but not to that of the goat or ass More commonly the sensitization is multiple but specificity is still a prominent feature After a time the allergic individual tends to have his attacks *precipitated or his* condition worsened by one or *more of a wide variety* of non specific factors unrelated to the *primary specific* cause

Secondary non specific factors

These include nearly all forms of minor trauma—toxic and psychic direct and reflex and so on It has been suggested by some that these may act by lowering the tolerance of the allergic individual to the primary specific allergens thus enabling the latter to provoke a reaction in even *more minute* dosage than is usually necessary Instances are not infrequent in which the precipitating effect of such non specific factors seem to exceed that of the primary specific cause and of course

it is well known that the allergic reaction can be modified by a wide range of bio chemical, psychological, endocrine and other influences, which may produce either an increase or a decrease *of the reaction, and the temporary improvement in* respiratory allergy, for example commonly brought about by such conditions as a pyrexial infection or by pregnancy is often very marked

It is necessary however to emphasize the opinion that all such factors can do no more than influence the course of a pre existing allergic sensitization whether the latter be active or potential, clinical or sub clinical

In this connexion it is rather difficult to accept the claims of some psychologists *that psychological trauma plays a prime part as a constitutional predisposing* factor in the aetiology of the allergic state although there is no doubt that the psychological factor is always active and often prominent in its influence on the course of the disease It should be borne in mind however that certain effects sometimes considered to be psychological may have a neurobiochemical basis of a normal physiological type The effects of sudden fright and of worry in asthmatic and urticarial subjects for instance are more probably due to the increase and the exhaustion respectively of the secretion of the adrenals than to purely psycho logical action

The writer has lately gained the impression that the incidence of urticaria—in which psychological factors are notoriously prominent—seems to have been in *creasing in certain sections of the community during the past year or two more* noticeably in what might be termed the middle class middle aged mothers of families group This raises the interesting speculation as to whether or not it may be the result of the increase of the stress and strain of life during the past few years which has probably been greater in this group than in any *other section of* the community In this connexion the psychologists expression escape from reality comes to mind although the writer must confess to an ignorance of its precise meaning

Allergic contact dermatitis

In allergic contact dermatitis the sensitization is of the acquired type being unin fluenced by heredity and occurs predominantly in adults affecting men more frequently than women The diagnostic test is the patch test the shock tissue is the epidermis the response is an erythematous or vesicular dermatitis and the histo pathology is spongiosis and intra epidermal vesiculation The reaction exciting substance is commonly non protein often a simple chemical and the underlying immunological mechanism is unknown Both the age and the sex incidence are probably the result of increased exposure to occupational allergens The allergens causing contact dermatitis are commonly of occupational origin and include vege *table animal* and chemical substances In the latter group alone thousands of sub stances have already been listed (Schwartz 1934) Many of these allergens have been shown to be substances of low molecular weight water soluble or oil soluble not of protein nature or even associated with proteins Whereas many substances such as phenol *caustic alkalis and acids or physical agents such as heat and fric* tion by their irritant action on the skin are capable of producing dermatitis this is not in any sense an allergic reaction Allergic contact dermatitis on the other hand is produced in individuals sensitized by previous contact by substances which are

harmless to the skin of normal unsensitized individuals That the capacity to be come sensitized through skin contact is acquired and not inherited is shown by the comparative ease with which normal individuals can be sensitized experimentally by treating the skin with potent sensitizers such as primula or poison ivy It is of course impossible to define sharply the border line between these two groups of dermatitis—the primarily toxic and the acquired sensitization—and in many cases both factors may be involved

The normal epidermis has several protective barriers—the horny layer the ability to neutralize acids and alkalis and the presence of fatty sebaceous secretions It has long been recognized that certain types of skin—the abnormally dry moist or oily—are more prone to sensitization as are skins which have been exposed to the action of irritants such as caustic alkalis or to mechanical trauma or maceration

TABLE II

POSSIBLE EXCITANTS OF ALLERGIC CONTACT DERMATITIS AS DETERMINED BY THE LOCATION OF THE INITIAL LESION (*Harley* 1947a *modified from Sulzberger*)

Site of initial lesion	Possible excitants
Face and scalp	Hair dyes cosmetics hat materials
Neck and face	Furs dyes collars scarfs necklaces pollens
Hands and forearms	Occupational substances gloves soaps cleansers
Body only	Rayon silk wool clothing in general rubber girdles bath salts
Feet and legs	Leather shoe polishes socks and stockings dyes
Ring fingers wrist and lobes of ear	Metal bakelite celluloid leather dyes
Spectacle areas	Metal artificial tortoiseshell
Genitals	Contraceptives (rubber quinine) douches toilet paper menstrual pads
Miscellaneous	Adhesive plaster ointments medicaments

or which are the seat of fungus or microbic infections Sulzberger (1939) explains this as follows

> It is logical to suppose that if the epidermis is the shock tissue (site of the primary lesion) certain substances coming into contact with the skin from without will be more capable than others of reaching th living epidermal cells in sufficient concentration to produce epidermal sensitization Keratolytics and detergents which destroy and or remove the fatty and horny covering are obviously prone to be epi dermal sensitizers The plant oils that can become dissolved in the fatty substances of the skin surface are more likely to produce contact dermatitis than the oil insoluble protein fractions of the plants The dyes such as paraphenyl nediamine with their

propensity for fixation to horny substances will also achieve a prolonged and intimate contact with the epidermis The solutions of metallic salts with their rapidly moving ions of small dimensions may be supposed to possess a greater facility for penetrating the protective covering of the epidermis than solutions or colloidal suspensions of larger particles The local anaesthetics such as procaine and butesin with their affinity for ectodermal structures may be inclined to adhere most intimately to the epidermis

It is obvious that such sensitization is likely to occur on the surfaces exposed to the outer world and that any anatomic or physiologic inferiority in the protective barriers will predispose to this type of sensitivity Individuals with excessively dry and easily fissured skin as well as those with soft moist and easily macerated skin are candidates for epidermal sensitization

It is even possible that persons with excessively oily skins and a predisposition for epidermal sensitization may have a tendency to develop sensitization to oil soluble allergens It is likewise well known that those occupations or pursuits which damage the protective layers of the epidermis either through friction maceration or trauma are more likely to produce contact dermatitis than other types It is also quite possible that the synergistic action of fungi and other noxious agents in producing epidermal hypersensitivity may be based upon similar breaking down of the protective sheath by the first agent which thus permits the sufficient penetration of the second sensitizing substance

Bacterial allergy

Hypersensitivity accompanying infection , as it has been called was at one time considered to be engendered exclusively by an infective process but it has been shown to be produced also by treatment with dead bacteria and their products Within this group there are several separate and distinctive immunological mechanisms involved In a study of pneumococcal allergy the writer was able to separate three distinct types of bacterial allergy to the pneumococcus and its products (Harley 1935 and 1937b)

The test is the intradermal the shock tissue is the cutis and upper cutis and the response is essentially an inflammation The tuberculin reaction is the classic type this type of reaction is not very specific although it is generally regarded as specific but this is probably due to the fact that there are no other related micro organisms commonly infecting man Certainly when dealing with the strepto coccus and other species of organisms which commonly inhabit man both as pathogens and as commensals the reactions are not type specific It is of interest that the majority of normal individuals give a skin reaction to *Bacillus coli* vaccine presumably because their tissues have been in contact since infancy with the coliform bacillus and its products so this may be regarded as an allergy normal to man

The chief group of allergic dermatoses which have the characteristics of bacterial allergy re the dermatophytide type of sensitization to the products of pathogenic fungi

Serum disease and drug allergy

When normal (non allergic) individuals are injected with a foreign serum various reactions known as serum disease may develop depending upon the amount of

serum given and on the route of administration If a large dose of whole serum is given intravenously practically 100 per cent of individuals will develop serum disease The incidence falls as the dose is reduced and slower absorption routes are used refined fractionated sera are much less prone to induce the disease than whole natural sera There are two distinct types of serum disease

Ordinary serum disease—This condition commonly follows a first injection of foreign serum and occurs after an interval of 6–14 days and consists of various degrees of one or other of a range of skin eruptions (commonly urticarial but may be scarlatiniform rubelliform petechial and so on) with or without pyrexia angioneurotic oedema joint pains serous effusions and enlargement of spleen and lymph glands Skin reactions are negative there is no indication of any hereditary factor being active and though the precise immunological mechanism is not definitely established there is some evidence to suggest that an antigen antibody (but not an idiotoxin idioceptor) reaction is involved Of the sera available horse serum is one of the most potent inducers of serum disease and bovine serum one of the weakest

Accelerated serum disease—This may occur in persons who have previously received one or more injections of serum of the same animal species The condition —which tends to be a more accentuated form of the ordinary disease—develops more rapidly and may be severe or even fatal Precipitins anaphylactic antibodies and sometimes idioceptor antibodies are demonstrable in the blood positive skin reactions may be present Though as in the ordinary type the immunological mechanism of the accelerated disease has not been fully established the condition does appear to be a form of acquired specific hypersensitivity Of all types of human allergy this seems to be the nearest to the classical anaphylaxis of the lower animals and it is retained in the allergy group perhaps chiefly for the reason that von Pirquet had se um disease in mind when he coined the term allergy

Allergic shock

There is a third type of reaction to an injection of heterologous serum namely allergic shock This occurs in persons who are naturally allergic (allergy group 1) to the particular species of serum and in whom the skin reactions are positive The immunological mechanism is an idiotoxin idioceptor reaction and the condition is usually severe and often fatal

Drug allergy

Drug allergy bears a close resemblance to serum disease in many respects and for this reason it is included in the group As was pointed out at the beginning of this chapter allergy to a drug is quite distinct from the condition of intolerance because the reaction induced by the administration of the drug to the hypersensitive individual is qualitatively abnormal and is not merely an exaggeration of the normal pharmacological action Drug allergy can occur in respect of almost any drug and the skin manifestations of the condition may take almost any form The drug may be given by any route and the incubation period may be anything from a few hours or less to a number of days Skin tests are usually negative the condition is acquired there is no evidence of a hereditary factor and the precise immunological mechanism is unknown

Other types of allergy to drugs do, of course occur—for example in allergic contact dermatitis (allergy group 2) and drugs may function as allergens in allergy group 1 these, however are more conveniently considered under their respective allergy groups In allergic contact dermatitis the skin tests (epidermal or patch) are often positive In the drug allergy group skin tests (dermal tests) are almost invariably negative though *the recent observations of Leftwich (1944)* on sulphonamide allergy are of considerable interest and give a valuable pointer to further investigation in other drug allergies Leftwich employed as allergens for intradermal testing the sera of individuals receiving sulphonamide therapy and reported the occurrence of positive skin reactions in patients clinically hypersensitive to the various sulphonamides by this technique Presumably the drugs act as haptens and require to be linked up with some human protein in order to achieve full allergenic activity

ALLERGIC DERMATOSES

The term allergic dermatoses is employed to designate those diseases of the skin in which allergy is believed to be of prime aetiological importance The allergic dermatoses include members of each of the four groups of allergic conditions (Table III)

TABLE III

CLASSIFICATION OF THE COMMONER ALLERGIC DERMATOSES

Condition	Allergy group
Urticaria	1 Hereditary
Allergic eczema (intrinsic dermatitis)	*1 Hereditary*
Allergic contact dermatitis (extrinsic dermatitis)	2 Allergic contact dermatitis
Dermatophytides	3 Bacterial allergy
Drug eruptions	2 Allergic contact dermatitis or 4 Serum disease and drug allergy

During the past decade there has been considerable clarification of opinion concerning the eczema dermatitis group of cutaneous inflammatory conditions Although this has been more marked in connexion with the problems of aetiology and pathology it has extended to the clinical nomenclature which previously was in a chaotic state The advance has been due in no small measure to the work of Sulzberger and his colleagues and to the stimulus their publications have given to further investigation in this field

On the clinical side there has been much confusion concerning the use of the terms eczema and dermatitis So *many varieties of cutaneous inflammatory conditions* were previously included in the eczema group that it came to be referred to as *the* dermatological scrap heap Pathologically eczema is inflammatory in nature and is therefore a dermatitis It is perhaps for this reason that the terms eczema and

dermatitis (and modifications of these) have been used more or less interchangeably by many dermatologists From the allergist s standpoint however the majority of workers have limited their use of the term eczema to those inflammatory conditions of the skin occurring principally in individuals with a family or personal history of allergic disease which are the results of intrinsic causes of a haematogenous nature whereas the term dermatitis or rather allergic contact dermatitis has been reserved for those forms of allergic dermatitis caused by external irritants and which are not subject to hereditary influences It is in this sense that the terms eczema and dermatitis are herein employed Recent work has shown that this aetiological differentiation of the two groups of conditions is supported by consideration of their pathological and immunological mechanisms and by the different test methods required for the specific diagnosis (Table IV)

TABLE IV

CLASSIFICATION OF ALLERGIC CONTACT DERMATITIS AND ALLERGIC ECZEMA AS REGARDS AETIOLOGY PATHOLOGY AND SPECIFIC DIAGNOSIS

(Harley 1942a modified from Coca and Sulzberger Sulzberger Wise and Wolf)

	Allergic contact dermatitis	Allergic eczema
Shock tissue (site of primary lesion)	Epidermis	Upper cutis (blood vessels)
Primary lesion	Spongiosis and intra epidermal vesiculation	Oedema extravasation of fluid and eosinophils (epi dermal changes are second ary)
Nature of allergen	Commonly non protein often simple chemicals (water or oil soluble)	Antigenic proteins (water soluble)
Manner of contact	Contactant or external*	Haematogenous or internal
Hereditary factor	Absent	Commonly present
Immunological mechanism	Unknown	Commonly idiotoxin idioceptor
Type of specific diagnostic test	Epidermal (patch)	Dermal (scratch prick or intracutaneous)
Nature of positive reaction	Erythematous or vesicular dermatitis	Weal and erythema
Reaction time	From several hours to days	10–15 minutes

* Rarely the manner of contact may be haematogenous—provided that the irritant is able to reach the epidermis in sufficient concentration from within the reaction typical of allergic contact dermatitis will be produced this eventually obtains in certain cases of drug eruptions

Cooke (1947) recommends discarding the term eczema altogether and suggests the designation allergic dermatitis for all forms of dermatitis due to allergic reactions using the adjectives extrinsic and intrinsic to indicate allergen contact

from without and from within the body respectively The simplicity of this aetiological differentiation has much to commend it although Cooke believes—rather contrary to the general consensus of opinion—that the basic immunological mechanisms of the two types are identical and that the changes are greater in the epidermis in one case (external contact) and in the dermis in the other (internal contact) depending upon which layer receives the first and major exposure to the allergen, and that the differences are merely quantitative

It must be kept in mind however that while such aetiological classifications of the allergic dermatoses are essential for therapy based on aetiological considerations such classifications are not to be taken as absolute and many instances of transitional and atypical types do occur For example a single patient may present a combination of allergic contact dermatitis and allergic eczema or, in a clinically typical allergic contact dermatitis the manner of contact may occasionally be haematogenous—provided that the allergen is able to reach the epidermis in sufficient concentration from within as does happen in certain cases of drug allergy Conversely instances of urticaria due to contactants for example have been reported

Clinical experience is inclining the writer to the opinion that an intrinsic toxic factor may also be of aetiological significance in many cases classifiable as of the allergic contact dermatitis type particularly in the physical allergy group (hypersensitivity to heat to light and to cold) comparable to that which is commonly demonstrable in urticaria dermographica

Furthermore it must be stressed that though an allergic aetiological mechanism may be demonstrable in a greater or lesser percentage of cases of certain dermatoses it does not follow that all examples of these dermatoses are necessarily allergic in origin This applies particularly to the urticarias

BACTERIAL SENSITIZATION FOCAL INFECTION AND THE TOXIC FOCUS

The role played by micro organisms in calling forth the basic mechanisms of allergization cannot be overestimated (Urbach 1946) All authorities recognize the *infective factor in the aetiology of a variety of allergic diseases and general and* localized bacterial infections as sources of allergens This latter is an aspect of the subject which seldom receives the attention it undoubtedly merits and it is of moment to examine the reasons for this

The writer employs the term bacterial sensitization for all those cases of allergic disease in which the allergen originates from an infective focus which may be either at the site of the manifestation of the allergic disease (as respiratory tract infections in the causation of asthma) or at a distance from it and be conveyed to the shock tissue usually by the haematogenous route (as in peridontal infection producing an irido cyclitis or a tonsillar infection causing an urticaria) In this sense bacterial sensitization is not of course synonymous with the classical bacterial allergy (allergy group 3) because it includes manifestations of other allergy groups when the allergens concerned originate from an infective process *It also* includes those cases of allergy to extrinsic allergens in which the specific allergen tolerance is lowered by an infective process as in Koenigsfeld s (1926) personal example of asthmatic attacks induced by amidopyrine only during the course of an

intestinal infection and in Urbach s case (1924) of a woman who had an extensive phlegmon on one leg and in which the oral administration of quinine produced an exanthem confined to the previously infected area Though clinical experience of aetiologic therapy in allergic manifestations produced by bacterial sensitization give considerable support to the hypothesis that the relationship between the infective process on the one hand and the allergic manifestation on the other is one of cause and effect it must be admitted that the precise nature of the mechanism involved is by no means clear at present

Furthermore the use of skin tests with bacterial vaccines and extracts has proved relatively unsatisfactory as a diagnostic measure particularly in allergy group I in sharp contrast to the dermal reactions obtained with inhalant and food allergens Though immediate skin reactions of the weal and erythema type have been reported occasionally the commoner reaction is the delayed inflammatory reaction of the classical bacterial allergy type

Also partly to blame for the neglect of the bacterial sensitization in allergy group I cases is the indiscriminate use of intradermal tests with extrinsic allergens (inhalants foods and so on) which frequently give false positive reactions in the absence of evidence of clinical sensitization that are liable to be misinterpreted by the enthusiast who considers all allergic patients in terms of skin reactions alone

In this connexion it is worthy of note that a considerable percentage of positive reactions has been obtained in presumably normal individuals with no family or personal history of allergy by means of the intradermal injection of concentrated allergens (Grow and Herman 1936 Pearson 1937)

In the writer s opinion many cases of so called food sensitization dermatoses (in which the attacks are definitely referable to the consumption of a particular food and are reduced or cease when that food is withheld but in which the skin reaction to the food is negative) are due to the effect of the food on an established intestinal infection leading to increased production of bacterial allergens which activate a bacterial sensitization mechanism In these cases the urticaria or other manifestation does not usually develop until 18–24 hours after the consumption of the suspected food in contrast to the shorter period between consumption and onset of symptoms in a true food sensitization In the writer s experience the majority of cases of chronic urticaria and angioneurotic oedema occurring in adults appear to be of the bacterial sensitization type commonly from an intestinal focus The older theory of bacterial toxaemia or toxic foci which was based on the conception of a primarily toxic action of bacterial products elaborated in the focus was found to be untenable in the majority of cases of these conditions classified by the writer as bacterial sensitizations though it is admitted that proven instances of such a mechanism have occasionally been recorded

If the matter be considered from the standpoint of allergy and if the processes involved are regarded as an allergic sensitization to bacterial products and not as a primarily toxic effect many of the objections to the older bacterial toxaemia theory are removed

The chief objections to the bacterial toxaemia theory were first the failure to achieve good results by surgical means in the majority of cases in which a

localized focus—capable of removal—was found and second the failure to find an infective focus at all in many cases

The relative failure of surgery in this type of case may of course, be due in some instances to inability to remove the focus completely but the main reason is probably an immunological one If in fact the mechanism had been one of primary toxic action—usually considered to be a fairly specific process—the objection would have been a serious one If however the mechanism is regarded as an allergic reaction to the nucleo protein or to an endotoxin of the organisms concerned the matter takes on quite a different complexion Bacterial nucleo proteins are not type specific (those of the pneumococci and of *Streptococcus viridans* are not even strictly species specific) so that a considerable degree of immunological overlap exists When dealing with those species of organisms which commonly inhabit man it does not follow because say a streptococcal focus in the tonsils is removed that the supply of nucleo protein allergen to the site of the allergic reaction is completely cut off since other types of streptococci with similar nucleo protein may be present in other parts of the body for example in the nasopharynx and may be able to keep the reaction going The problem therefore would seem primarily to be one that calls for an attempt to readjust the patient s abnormal reactions back towards normality

It is an interesting relic that many still uphold the view that focal infection can be of little or no aetiological significance in those conditions now regarded as bacterial sensitizations because the living micro organisms cannot be recovered from the site of the allergic reaction and because the whole condition is not cured by antibiotics In a recent example of this superficial line of thought a distinguished physician has expressed his opinion that focal infection did not play an important part in rheumatoid arthritis because the condition could not usually be cured by means of sulphonamides and penicillin! The surgical removal of a focus may be a desirable thing but it should not for the foregoing reasons be usually more than secondary to appropriate desensitization treatment Indeed in some instances the use of surgery is definitely inadvisable as the first step in treatment a well known example is the frequency with which the development of asthma follows radical surgical operations on the allergic nose when preliminary desensitization treatment is omitted

Regarding the second objection to the bacterial toxaemia theory namely the failure to find a toxic focus this should be regarded as primarily a matter for the bacteriologist since a toxic focus does not necessarily entail the presence of diseased tissue or of signs of an acute or chronic infection and accordingly ordinary clinical diagnostic methods are likely to be inadequate although it is not suggested that these methods should be omitted as a routine measure

Urbach (1946) calls attention to the importance of one form of toxic focus which has received only scant attention since it may show no local signs whatever namely pathological flora of the intestine particularly the colon This condition (named colon dysbacteria by Nissle (1936)) is characterized by a replacement of the normal colonic flora by streptococci and atypical colon bacilli In the writer s opinion such pathological flora of the intestine constitute one of the commonest toxic foci in bacterial sensitization cases

Failure to discover toxic foci is the failure of the bacteriologist Routine determinative bacteriological methods for the detection of toxic foci in those cases in which the causal mechanism is a bacterial sensitization are of little more use than would be the employment of toxicological methods in a case of food allergy In both cases one looks not for a primary toxin but for an abnormal reaction on the part of the patient In the case of allergic sensitization to inhalants foods and so on it is possible to resort to the skin test but in bacterial sensitization the use of bacterial vaccines extracts and solutions for skin tests has proved relatively unsuccessful As mentioned before this may possibly be due to our inability to prepare suitable bacterial allergens for the purpose of the test but the main reason is probably the relative lack of specificity in sensitization to bacterial nucleo-protein

Fortunately another technique is available for tackling the problem from a different angle This is the method of pathogen selective culture otherwise known as the Cohen Heist technique The principle of the method is the utilization of the *in vitro* bactericidal power of the patient s whole fresh blood to kill off organisms to which the patient is immune and to allow the growth of potential pathogens (Solis Cohen 1939) In the writer s experience this method for the detection of toxic foci and for the preparation of bacterial antigens for therapeutic desensitization is extremely valuable and would appear to be the only rational method at present available In this connexion Crowe (1937) on the basis of his extensive experience of the method considers that it should never be omitted when autogenous vaccine treatment is contemplated in conditions of the toxic focus or bacterial sensitization type Crowe s opinion is of considerable interest in view of the criticism—much of it unjustified—of the theoretical basis of the pathogen selective method which has emanated from certain quarters (The writer considers that much of this criticism has been due to what the psychologists would call a defence mechanism elaborated by the back room boy type of bacteriologist who strongly dislikes being call d upon to make a personal examination of the patient—essential in the case of the pathogen selective method—and who prefers that contact with the patient should be reduced to the inscription of the latter s name or number on the container in which the pathological specimen is sent to his laboratory)

When an adequate bacteriological examination employing pathogen selective methods is not possible a good stock antigen of appropriate type is better than an autogenous vaccine made from a specimen by a technician in a laboratory divorced from clinical contact with the individual patient

CLINICAL HISTORY AND GENERAL EXAMINATION

The importance of a careful and thorough analysis of the clinical history as the first step in the investigation of the allergic patient can hardly be over emphasized Though it is difficult to give a full account of all the factors to be considered in taking the clinical history and though the recognition of the most pertinent line of inquiry for any given patient depends chiefly upon the clinical experience of the investigator the following is an outline of the main points to be considered

After the sex age and occupation are noted the nature and duration of the complaint are inquired into It is then convenient to ascertain the presence or absence

of allergic diseases in the patient's family and the presence or history of allergic diseases other than the present complaint in the patient himself Next data should be obtained concerning the manner, season and time of onset of the present condition whether the attacks are remittent or intermittent the length of the periods of freedom from symptoms the presence of respiratory or other infections the relationship of the attacks to environment, occupation climate change of residence and so on to other ailments or infections complained of to foods and drugs to cosmetics to exercise and emotional upsets (to menstruation and pregnancy) the presence of pets and other animals in the patient's environment and the type of bedding used, and the effects of drugs such as ephedrine or Benadryl in alleviating the symptoms

It may be necessary to ascertain the substances with which the patient comes into contact either occupationally or otherwise by means of careful questioning and by reference to the available list of known allergens met with in various trades and occupations

The chief objects of this part of the examination are to establish the probability that the condition complained of is of allergic nature to ascertain whether the allergens involved are likely to be foods drugs inhalants contactants and so on or whether some form of intrinsic or bacterial sensitization allergy is probably involved and to assist in the selection of appropriate groups of allergens for skin testing and the recognition of other pertinent laboratory diagnostic aids

It is most desirable that a general medical examination and the appropriate clinical specialist examination, should have been made prior to the allergic investigation with special reference to the system involved, to the presence of toxic foci and including such special examinations (skiagrams test meals blood counts and Wassermann test) as may be indicated

SKIN TESTS

Dermal tests

The well known diagnostic tests of the weal and erythema type are generally applicable in the hereditary allergy group 1 (asthma hay fever urticaria eczema and so on) As the shock tissue involved in this reaction is the blood vessels of the upper cutis the epidermis must be penetrated to allow the allergen to reach the sensitized cells There are three main techniques for the test These are (i) the *scratch* method which consists in scarifying the skin with a needle or scalpel and applying the allergen solution or powder (ii) the *intradermal* method which consists in the intracutaneous injection of a small volume of the allergen solution by means of a syringe fitted with a fine short bevelled needle and (iii) the *prick* method which consists in pricking the skin with a hypodermic needle through a drop of concentrated allergen solution this technique was introduced by Lewis (1924) in his classical studies of the reactions of the skin to histamine and has been applied to the routine diagnostic skin testing of allergy patients

The advantages of the prick method of testing over the scratch and intradermal methods are the simplicity accuracy the almost complete absence of discomfort to the patient and the rapidity of performance the last is a very important point when dealing with children and with large numbers of patients in a clinic As the

amount of trauma inflicted on the skin by the prick method is much less and is more constant in degree than that produced by the scratch and intradermal methods doubtful reactions and pseudo reactions are much less frequent The danger of general reaction by no means n gligible with the intradermal method is reduced to a minimum by the prick method The writer has only once seen a general reaction following a prick test and that was a very mild reaction in a patient who was exceedingly sensitive to grass pollen

Technique

A 1 millilitre all glass or tuberculin syringe fitted with a sharp No 15 standard hypodermic needle is employed A small quantity of the extract to be tested is drawn into the syringe and a drop is ejected on the patient s skin (the forearm arm or front of the thigh is usually the mo t convenient) With the syringe held pen fashion the skin is lightly pricked once with the needle through the drop at right angles to the surface The drop of extract is then wiped off gently with a pledget of cotton wool A control test with normal carbol saline is made on a neighbouring skin site The optimal depth of the puncture is about ½–1 millimetre that is just sufficient to be felt as a definite prick the process is not painful and blood need not be drawn Comparative tests have shown that by increasing the depth of the puncture so as to produce an unpleasantly sharp sensation and to draw blood very little effect is produced on the size of the ensuing reaction

Apart from an occasional gentle wash with soap and lukewarm water in the case of c rtain types of out patient no attempt is made to sterilize or prepare the skin to be tested The method frequently advocated of washing the skin with soap and warm water followed by the application of spirit has been found to be not only unnecessary but definitely disadvantageous especially when dealing with dermographic or other deli ate skins The syringe is sterilized by filling and emptying it a few times with hot oil from a small bath which is maintained at a temperature of 125–130 C The excess of oil is removed by drawing sterile carbol saline into the syringe shaking and emptying it When performing a number of tests on a patient with only one syringe it is unnecessary to re sterilize the syringe between each test it is sufficient to wash it through twice with carbol saline between the individual tests

A positive reaction consists in the usual urticarial weal with surrounding erythema about the site of the skin puncture with absence of reaction at the control carbol saline site The weal of the positive reaction is fully developed in 10–12 minutes from the time of making the puncture the reaction is therefore examined at this time After 12 minutes the edges of the weal tend to become less distinct Records of reactions are made as follows an albumin-coated glass slide (microscopic or lantern) is placed in contact with the skin coated side uppermost and is gently pressed against the reaction This outlines the weal clearly and the latter is traced in ink on the slide The slide is then placed on an illuminated opal glass plate the patient s record card is superimposed and a permanent record is made by copying the tracing on to the card For routine purposes a record of the reaction weal without particulars of the erythema is sufficient

The chief essential for the satisfactory performance of the prick test is the use of potent concentrated fluid extra ts It is not proposed to deal here with the details of the manufacture of extracts for skin testing except to say that the extracts used are not usually less than 10 per cent strength that is 1 gramme of substance treated with 10 millilitres of extracting fluid or 100 000 units per millilitre on the Noon unit system and in the case of weaker allergens such as fruit and vegetable

juices more concentrated extracts are needed It is the writer s experience that the most potent and satisfactory extracts are usually those prepared with the minimum of manipulation The keeping properties of these extracts vary somewhat but the average loss of potency after one year in the ice chest is not usually more than 25 per cent with the majority of the extracts as judged by comparative skin tests It is advisable however, to renew the stock supplies at least once a year

The interpretation and significance of skin reactions

There is not usually any difficulty in deciding on the degree of reaction of the skin to any allergen compared with that to the control carbol saline as tested by the prick method With the standard technique described above the size of the reaction to a particular allergen is remarkably constant as is shown by the results of making the tests in duplicate or triplicate on comparable areas of skin The results of the prick method are therefore very readily assessed as strong positive , positive weak positive and so on By any technique there is never any doubt about a strong positive but with regard to slighter degrees of reaction the prick method gives more uniform results than the scratch or the intradermal methods The accuracy of assessment of the degree of reaction especially when dealing with weak reactions depends upon the absence of appreciable non specific irritant effect of the extract used and all extracts should be tested in normal non allergic skins before being employed as specific test reagents Except in dermographic skins non specific reactions are rare with the prick method in view of the very slight and constant trauma inflicted on the skin and the very minute amount of test fluid deposited in the cutis vera

The assessment of the clinical significance of the skin reaction is a much more difficult matter A positive reaction may mean that the patient (i) is clinically sensitive to the particular substance when it is encountered in the natural manner or *(ii) is not clinically sensitive though he may have been sensitive at some time in the* past or may be about to develop such clinical sensitivity Occasionally a reaction may occur to a substance which could not be responsible for present or past sensitizations or even to a substance with which the patient has never been in *contact* for example the reaction of English hay fever patients to the pollen of the bamboo and sugar cane (Freeman and Hughes 1938) Most of these reactions are due probably to biological relationships between the allergens in question but occasionally they may be due to chemical similarities in biologically unrelated substances akin to the precipitin reaction between Type 2 anti pneumococcus serum and certain hydrolysed gums which is caused by similarities of the carbo hydrate groups of the hydrolysed gums and the Type 2 pneumococcus In this connexion also it is well known that practically every person who has previously received animal serum for therapeutic purposes exhibits a positive skin reaction to that serum but a person thus sensitized to say rabbit serum does not develop allergic symptoms on natural contact with rabbit fur or rabbit meat (Harley, 1933)

A negative skin reaction may mean that the patient (i) is not clinically sensitive to the substance (ii) is clinically sensitive in the absence of skin reactions or (iii) that the extract used is not potent

As a general rule however it is to be emphasized that the importance of any allergen as a specific causal factor in an allergic disease should not be adduced from a positive skin reaction alone A positive reaction is rarely of much help as a clue to the specific diagnosis and treatment in the absence of evidence of a corresponding clinical sensitivity obtained from a study of the clinical history It is the *correlation of skin reactions with clinical sensitivity* that is the basis of accurate specific diagnosis and successful treatment Instances are not uncommon of the skin test enthusiast who concludes from a skin test examination that a particular allergic child of very tender years should avoid lobsters venison and strawberries but may eat with impunity mackerel duck and pineapple The writer frequently sees patients who state that positive results had been obtained from previous skin tests (invariably intradermal or scratch) and in whom the clinical history clearly shows that the particular substances incriminated could not possibly have been responsible for the symptoms in these patients subsequent skin tests by the prick method give negative results The skin reactions are very valuable as confirmatory evidence of a suspected clinical sensitivity and in some cases the specific causal allergen may be recognized from the clinical history alone for example the patient who complains of eczema and rhinitis from May to July but is symptom free at other times of the year is almost certainly a case of grass pollen allergy The diagnosis is then clinched by obtaining a positive skin reaction with grass pollen The clinical history will usually afford indications of possible sensitizations and will aid in selecting particular groups of allergens for skin tests The indiscriminate testing of a patient with a large number of allergens as the first or only step in the routine investigation is always laborious and often futile If a patient has symptoms with little or no seasonal variation it is not likely to be of much avail to test him with uncommon seasonal foods nor should his trouble come on during the day time when he is out of doors to test with a large variety of bedding materials As Cooke (1947) neatly summarizes the matter Skin testing aimless excessive and misunderstood has done more than its share in bringing allergy into disrepute

EPIDERMAL TESTS

Patch test

The patch test was introduced by Jadassohn in 1896 but it did not attract more attention until comparatively recently when the demonstration that the epidermis and not the cutis is the shock tissue (site of primary lesion) in contact dermatitis led to the development of the test by Sulzberger and Wise (1931) and others The principle of the method is the establishment of prolonged contact between the suspected allergen and the unabraded epidermis

Technique

In the case of solids a small portion of the substance or of the powdered substance (which may be moistened) is placed directly on the skin in the case of fluids a small square of linen gauze or filter paper soaked with the fluid is used The site is then covered with a larger square of Cellophane or oiled silk which is held by means of an overlapping square of adhesive tape Alternatively Cellophane circles may be affixed by celloidine solution as recommended by Grolnick (1936) It is advisable to include a control test of Cellophane or silk with adhesive tape in case the patient is sensitive to these The skin sites chosen for the tests must be free from dermatitis at

the time of testing Generally speaking it is best to test on areas of clear skin fairly close to the dermatitis area or on sites which have been involved in previous attacks although many workers routinely employ the skin on the back The patches are left *in situ* for 24–48 hours unless the presence of marked itching or a spreading rash demands their earlier removal In the case of dress materials it is often necessary to leave the patch for 7 or 10 days before a reaction develops This is probably due to the fact that the element of friction often active in the natural induction of the dermatitis is not duplicated by the method of testing so that more prolonged contact may be necessary It is not therefore safe to dismiss such a test as negative until it has been in contact for at least 14 days A positive reaction consists of a circumscribed area of inflammation varying from erythema to vesiculation or even necrosis in the case of powerful allergens and it often reproduces the type of lesion present in the patient It is sometimes necessary to establish by tests on normal individuals that the substance giving rise to a positive reaction is not a non specific skin irritant in the concentration employed

Although the patch test has been established on its merits as an invaluable diagnostic aid in allergic contact dermatitis it is subject to the same limitations as those governing the dermal tests in other types of allergic disease and the results must be interpreted with care and with due regard to the other aspects of the case It is the correlation of skin reactions with clinical sensitivity that is the basis of accurate specific diagnosis and successful treatment

CLINICAL TRIAL

This method can be applied in two ways (i) as a confirmatory test that the allergen —suspected from the results of skin tests or otherwise—is the cause of the natural disease by obtaining improvement or disappearance of the dermatitis when the substance is withdrawn from contact with the patient (which may require several weeks) and (ii) to detect the causal allergen or allergens, in the absence of positive skin reactions For example a patient with cosmetic dermatitis after a period of avoidance of all cosmetics with subsequent clearing of the rash, tries each of the possible excitants for a week or so in turn in order to determine which one of the suspected agents is responsible Although the specific diagnosis of the majority of allergic contact dermatitis cases is relatively straightforward instances are not uncommon in which the tracking down of the causal allergen or allergens taxes the patience and ingenuity of the investigator Two illustrative cases are described below

Mahogany dermatitis

A male patient aged 20 years (occupation cabinet maker) had dermatitis of the hands arms and occasionally of the face at intervals over a period of 2 years The patient had noticed that the rash appeared only when he was working with mahogany and quickly cleared up on stopping work Previous personal and family histories were negative for allergy Patch tests with mahogany dust and a saline extract of the dust were positive The patient was desensitized with the dust extract during a period of avoidance of contact with mahogany at work and was later able to handle the wood with impunity

Occupational (?) dermatitis

A male patient aged 31 years (occupation motor mechanic) exhibited typical dermatitis of the hands and arms There was a history of attacks of a similar rash

sometimes spreading to the trunk occurring over a period of 3 years The general health was good and there was no previous personal or family history of allergy The patient had been employed in the same garage for 6 years The first attack had appeared soon after he began to work on Diesel oil-engine vehicles The rash always improved when he stopped work but reappeared within a few weeks of resuming appearing first on the fingers then spreading to the arms neck and face and—on one occasion when he did not stop work soon enough—becoming generalized Patch tests with Diesel oil fuel were negative Repeat tests were likewise negative Tests with other engine fluids (lubrication oils brake fluid and so on) were negative Tests with the soap and cleansers used by the patient were negative Consideration of these findings suggested that the causal allergen might be associated with the *used* fuel or oils that is the actual material that the patient was getting on his hands during work Accordingly patch tests were carried out with the various dirty fluids encountered in dismantling and adjusting an engine and vehicle The results of these further tests were uniformly and disappointingly negative

The clinical history and the appearance of the rash were typical of allergic contact dermatitis The failure to obtain positive patch tests may have been due to a number of reasons— probably the failure to duplicate the actual conditions encountered during work or the lack of friction or to the choice of poorly reacting or possibly refractory areas of skin for the tests although of course the possibility of failure to discover a causal allergen could not be excluded However the clinical findings and the history seemed to justify the diagnosis of allergic contact dermatitis of occupational origin

The problem of treatment then arose For economic reasons the patient was loath to consider changing his occupation The use of gloves sufficient for complete skin protection was impracticable Protective ointments did not appear to offer much hope of relief It was finally decided to try non specific bacterial vaccine therapy and an autogenous faecal vaccine was prepared After a period away from work with clearing of the rash the patient was given a course of injections he returned to work later the injections being continued at weekly intervals After 6 months of such treatment the rash—which had slowly returned—was not nearly so acute as hitherto and the patient elected to continue at work and to carry on with his injections

BACTERIOLOGICAL METHODS

Pathogen selective culture

This technique was originally introduced by Solis Cohen (1939) as a selective method of culture for chronic infections in which the primary infecting organism tends to be crowded out by secondary invaders for infections in which the routine methods of bacteriological culture frequently fail to isolate the primary infecting organism and for the detection of infective foci The principle of the method is the utilization of the *in vitro* bactericidal power of the patient s blood to kill off the secondary invading organisms and those to which the patient is immune and to allow the growth of the potential pathogens The technique is not difficult

Technique

A small amount of infected material is placed in a sterile 4 × $\frac{5}{8}$ inch test tube to which is then added 1 or 2 millilitres of the patient s whole fresh blood in the case of heavily infected material such as sputum and faeces it is better to make three or four serial dilutions of the material in blood (fractional pathogen-selective culture) in case the primary implant would prove to be too heavy the tubes are incubated for 24 hours at a temperature of 37 C Subcultures are then made on blood agar and other

the time of testing Generally speaking it is best to test on areas of clear skin fairly close to the dermatitis area or on sites which have been involved in previous attacks although many workers routinely employ the skin on the back The patches are left *in situ* for 24–48 hours unless the presence of marked itching or a spreading rash demands their earlier removal In the case of dress materials it is often necessary to leave the patch for 7 or 10 days before a reaction develops This is probably due to the fact that the element of friction often active in the natural induction of the dermatitis is not duplicated by the method of testing so that more prolonged contact may be necessary *It is not therefore* safe to dismiss such a test as negative until it has been in contact for at least 14 days A positive reaction consists of a circumscribed area of inflammation varying from erythema to vesiculation or even necrosis in the case of powerful allergens and it often reproduces the type of lesion present in the patient It is sometimes necessary to establish by tests on normal individuals *that the substance giving rise to a positive reaction is not a non specific* skin irritant in the concentration employed

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There is no doubt that the repressing and dissolving technique is one that has had to be frequently applied in the interests of therapeutic progress in allergy

SPECIFIC AVOIDANCE

When the clinical sensitivity is to a single allergen or to a small number of allergens which can be readily and completely removed from contact with the patient specific avoidance gives excellent results This can usually be achieved in for example most cases of food and drug sensitization The method is also generally applicable to all contactant and inhalant allergens which are relatively localized in their distribution and which can be completely avoided or eliminated from the patient s environment without serious inconvenience or hardship In other cases an easier alternative may be the removal of the patient from the causal environment

If such avoidance of contact would entail serious financial or other hardship as in many cases of occupational allergy for example much can sometimes be accomplished—after a period of complete avoidance and subsequent clearing of the dermatosis—by reducing further contact to the minimum by appropriate protective measures

When avoidance is impracticable or impossible there remains desensitization to be considered

DESENSITIZATION

Non specific

The search for an effective universal or non specific desensitizing agent started in the early days of allergy therapy and has continued unabated ever since peptone autohaemotherapy milk injections auto urotherapy protein shock histamine and a host of others have all been claimants in their day ethylene disulphonate being a recent addition to this list of glorious failures They have all had their vogue a number have lingered and are still considered to be useful while many have fallen into complete disuse Although we have all seen patients with some intractable dermatosis shocked into recovery by a stiff dose of T A B intravenously and although indeed we are sometimes glad to fall back on such remedies when more rational treatments are lacking or are ineffective none of them is regularly beneficial thou h some are often worth a trial their use is purely empirical and to employ them is usually a confession of failure to achieve a more rational therapy

Specific

In 1911 Noon reported his results in the treatment of hay fever with active immunizat on in which he used grass pollen extracts administered subcutaneously in a graded series of doses After Noon s untimely death his method of treatment was developed by Freeman and the basic principles of the method have since met with almost universal acceptance and application in all diseases of allergy Group I (asthma hay fever *eczema* urticaria and so on) The general principles details and modifications of the treatment are well known and are fully described in all the text books they have *been reviewed by* the present writer elsewhere (Harley 1942b) The general results of specific desensitization in selected cases are highly satisfactory

suitable media and incubated The resulting growths are examined and compared with a control series of direct cultures of the pathological material

In the writer s experience of the bacterial sensitization allergies the two most *important sites of toxic foci* are the post nasal space and the intestine, and in such cases the examination of a post nasal swab and of the faeces by the pathogen selective technique should never be omitted

METHODS OF TREATMENT

All rational therapeutic methods are based on the attempted interruption or modification of some phase of the allergic reaction

Specific avoidance aims at preventing contact between the causal allergen and the allergic shock tissues *Desensitization* specific and non specific attempts to render the cells of the shock tissue insensitive to the action of the allergen Or allowing the allergen allergic antibody union to take place attempts can be made to modify the action of the liberated histamine There are a number of possibilities here One is the administration of drugs such as adrenaline and other sympathomimetic agents which have a pharmacological action the reverse of that of histamine or alternatively attempts could be made to neutralize or inactivate the liberated histamine Such a method was the histaminase treatment This histaminolytic enzyme discovered by Best in 1929 was found to be quite effective in the inactivation of histamine *in vitro* and raised considerable hopes regarding its possible clinical application However apart from favourable reports by a few of the early and presumably over enthusiastic experimenters it failed to achieve a therapeutic success and the treatment has fallen into disuse Another line of approach to the problem consisted of trying to immunize or desensitize the body tissues against the action of histamine This was attempted by parenteral and oral administration of graded doses of histamine itself Here again however the clinical results proved disappointing A more recent development was the introduction of histamine azo protein compounds in the hope that the coupling of histamine with a protein molecule would enhance the antigenicity of the histamine hapten The results of preliminary immunological and animal tests were encouraging but the results of clinical trials have not fulfilled expectations Today the chief interest centres on the discovery of the anti histamine drugs a group of substances which combat the action of histamine and which appear to act by competing with histamine for sites on effector cells thus blocking the action of histamine on the latter in a manner analogous to the displacement of *p* aminobenzoic acid by the sulphonamides

The psychological factor active in allergic disease plays a definite part in the response of the patient to treatment and for this reason allergy has been an exceedingly happy hunting ground for the experimental therapist The subject affords numerous examples of apparently excellent clinical results being obtained by the enthusiastic originator of a new treatment and by the progressively poorer results obtained by later and perhaps more sceptical workers

Especially marked in the study of the allergic diseases has been the amount of labour expended in debunking new treatments As Faraday more eloquently expresses it The Truth of Science has ever had not merely the task of evolving herself from the dull and uniform mist of ignorance but also that of repressing and dissolving the phantoms of the imagination

should not be attempted in selected cases of dermatitis caused by simpler chemical allergens. The main drawback to therapeutic experimentation in the latter type of case has been the frequency with which the allergen is itself toxic. However, the results reported by Ridley and Maclean (1937) on the desensitization of atropine sensitive ophthalmic patients by subcutaneous injections of atropine solution rendered relatively atoxic by admixture with human serum give a valuable pointer to similar therapeutic trial in allergic contact dermatitis.

Vaccine therapy

Though some workers have stated their belief that all forms of vaccine therapy in allergic disease may be described as non specific desensitization, the writer's clinical experience indicates that desensitization by means of pathogen selective vaccines is to be regarded as a specific measure. How often are patients seen in whom vaccines have been tried and found useless, when a subsequent trial of vaccines prepared by pathogen selective methods has given excellent results. The vaccines have *been tried* patients are usually those in whom the vaccine in question has been the product of a postal specimen sent to a commercial laboratory with the request Please make vaccine. This is much on the same level as sending a day's rations from a patient with suspected food allergy and saying *Please make extract for desensitization treatment*.

In the writer's experience the best results are generally obtained by the use of minimal effective doses, rarely in excess of 10 million organisms and frequently less. A commencing dose of 0.1 million heat killed organisms by the subcutaneous route is employed. The dose is repeated at intervals of 5–7 days and is cautiously increased by 25–50 per cent each time until satisfactory clinical results are obtained. The increase of dosage is based on the absence of focal, general or marked local reactions to the preceding injections. The interval between injections, after a few months of weekly injections, is then gradually increased to 2, 3 or 4 weeks. The optimal dosage and the duration of treatment required vary greatly but it is usually necessary to repeat the maximal dose at 2–4 week intervals for at least 6–12 months.

Attention has already been called to the frequent necessity for a course of pathogen selective vaccine desensitization as a pre operative treatment preliminary to the surgical removal of a toxic focus.

In cases of mixed aetiology, commonly a combination of sensitization to food or inhalant allergens together with an endogenous bacterial sensitization mechanism, desensitization treatment to both types of allergens may be combined and is the method of choice in the writer's experience.

Accessory therapeutic measures

In addition to the various methods of specific therapy detailed above and apart from the use of palliatives and of the surgical treatment of toxic foci in selected cases of the bacterial sensitization type, the two commonest accessory factors which demand additional attention in the therapeutic regime of the allergic dermatoses are the psychological factor and the toxic colon.

Specific desensitization in allergic contact dermatitis

Most of the published work on specific desensitization in allergic contact dermatitis has been on pollen sensitive and plant sensitive patients. In accordance with the commonly held view that the causal allergens in these cases are associated with the plant oils (Brown, Milford and Coca, 1931; Engman, Moore and Kile, 1935), the majority of workers have used for therapeutic desensitization preparations of oil solvent extracts given intramuscularly or subcutaneously, earlier workers having failed to obtain satisfactory results with aqueous extracts. Satisfactory clinical results with oil solvent extracts were reported by Coca (1934), Engman, Moore and Kile (1935) and Frank (1935). Some observers, however, reported unsatisfactory results with these extracts but good results with aqueous extracts (Sulzberger and Wise, 1930; Brunsting and Williams, 1936; Rowe, 1937). In Great Britain Palmer and Freeman (1934) obtained satisfactory results with aqueous extracts in dermatitis occurring in daffodil pickers. The failure of the earlier workers with aqueous extracts may well have been due to inadequate dosage, particularly when it is borne in mind that the allergen, to effect desensitization, has to reach the epidermis from the blood stream, and that even bigger doses than those necessary for dermal desensitization (hay fever) may therefore be required.

In the matter of aqueous *versus* oil solvent extracts, a paper by Shelmire (1940) is of considerable interest, in it he claims that a water soluble dialysable fraction of the oleoresin, and not an oil, is the causal allergen in poison ivy dermatitis.

The writer's experience is not extensive, but it indicates that relatively crude aqueous extracts are quite satisfactory. Until the chemical nature of the causal allergens is established beyond doubt, it would seem unsafe to rely upon more refined preparations, from oil solvent extracts or otherwise. Specific desensitization has been successfully applied for most allergens of animal and vegetable origin observed by the writer. Crude aqueous extracts, prepared by extracting the allergen substance with saline in the presence of toluol at ice chest temperature and then passing it through a Seitz filter, are employed. It is, of course, necessary to ascertain by patch tests whether the extracts are potent before beginning the treatment. Desensitizing injections of the extract are given subcutaneously, beginning with a dose of 20 units (Noon system), increasing by 20 units each time to a dose of 200 units, after which increments of 15–25 per cent on each successive dose are made to a top dose usually of 100 000 units. When there is no special reason for urgency the injections are given at the rate of 2 or 3 per week to begin with, lengthening the interval between injections to one week as the bigger doses are reached. Whenever possible the patient should practise specific avoidance during the first few months of the desensitization treatment. After the maximal dose is reached, it is repeated at 4 weekly intervals for at least 6 months. The foregoing dosage scheme is similar to that employed in hay fever, and, in common with the treatment of that disease, the majority of patients are trained to inoculate themselves after a preliminary period of treatment at clinics (Harley, 1942b). Reactions other than local have not so far been encountered during treatment. The clinical results obtained have been excellent.

Although the writer's experience of desensitization has been confined to allergens of animal and vegetable origin, there seems to be no reason why desensitization

quickly reaches its maximal intensity After the mixture has stood for 1 minute add 3 millilitres of chloroform shake and then allow the chloroform to settle If necessary repeat the extraction until all the blue colour has been removed from the supernatant fluid Any iodine or bromine present is removed by the addition of a few drops of 10 per cent sodium thiosulphate

In the majority of cases the urine of normal adults (first morning specimens) will show at least a trace each of indigo blue in the chloroform and skatole red in the supernatant fluid Over oxidation does not occur nor has the writer found any evidence of incomplete oxidation or of the formation of indigo red in urine containing marked excess of indican

Apart from the treatment of frank infections of the dysenteric and mucous colitis types intestinal antiseptics such as Sulfasuxidine and so forth are generally of no help to the toxic colon

The diet should not be overlooked even though no food sensitization is present The striking effect of a little starvation in many cases of intractable dermatoses is often the reason for the results obtained by Nature cure enthusiasts

Colonic lavage is sometimes helpful but it is a two-edged weapon only to be employed with caution in the writer s experience its use is contra indicated as the first step in the treatment of the toxic colon in allergic patients particularly when constipation is marked because it may result in a temporary increase of toxic absorption from the bowel The following case recently afforded a good example of this

A woman aged 67 years who had been a sufferer from sciatica for a number of years and who also had a mild allergic rhinitis undertook a rather over rigorous Nature-cure régime The treatment was scheduled to begin with 14 days complete starvation (only water being allowed) together with colonic lavage Within a few days of commencing treatment the patient developed urticaria and generalized pruritus from which she had never suffered previously The practitioner s approval of the fact that his treatment was most successfully driving out the poisons from the patient s system was apparently unclouded by any realization that it was driving them out the wrong way Subsequent investigation confirmed that the urticaria was of the bacterial sensitization type from an intestinal focus

THE NEW ANTIHISTAMINE DRUGS

Mention should finally be made of certain new antihistamine substances They represent an important advance in the palliative treatment of allergic conditions and are of considerable clinical interest Before their introduction the main group of anti allergic palliatives was the sympathomimetic drug group—adrenaline ephedrine and so on These drugs owed their anti allergic action to the vasoconstrictor and antispasmodic effect which they produce Broadly speaking their pharmacological action is the reverse of that of histamine The new antihistamine drugs have a different action They apparently act by blocking or preventing the action of histamine analogous to the displacement of *para* aminobenzoic acid by the sulphonamides

When a psychological causal element assumes major proportions it calls for treatment Apart from psychological treatment of which the writer has no experience much can be accomplished in these patients by the application of common sense principles such as the institution of active hobbies and interests for the unduly introspective the correction when possible of domestic or emotional stress and strains the removal of an over pampered child to boarding school and so on

Relief of the toxic load on the colon

This rather old fashioned outlook should be revived in spite of academic doubts about the possibility of establishing sour milk bacilli in the intestine The allergic patient with a streptococcal gut flora, whether or not the blood sedimentation rate be raised or excess indicanuria be present nearly always obtains benefit from a course of lactic milk The writer can recommend the yoghurt manufactured by the Express Dairy Company When lactic milk is not obtainable locally or when a more laxative action is required Emulsio Lactobacillus Acidophilus (Endocrine Spicer) is a suitable alternative (With the advent of the factory processing of milk to the stage of cheese and other plastics the good old fashioned buttermilk has it seems disappeared for all time)

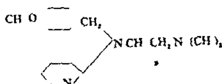
Urinary indican consists chiefly of potassium indoxyl sulphate and is derived from indole a toxic putrefactive substance which is produced in the intestine by the bacterial decomposition of tryptophane though it may also result from the decomposition of pus in other areas for example in lung abscess Some of the indole is absorbed and it is detoxicated in the liver by oxidation to indoxyl and conjugated with sulphate which is then excreted in the urine The degree of indicanuria in the absence of liver disease and of localized pyogenic infections may be taken as a measure of intestinal toxaemia

Tests for urinary indican depend upon the liberation of indoxyl by acid and its subsequent oxidation and condensation to indigo blue which is then extracted by chloroform Any skatoxyl present is oxidized to skatole red which is insoluble in chloroform In the writer s opinion most of the text book tests for indican are relatively useless—with the exception of the Jaffe test If the oxidation process is not very carefully controlled the indigo blue and skatole red are themselves oxidized to yellow or colourless compounds so that unless very large amounts of indican are present (as in intestinal obstruction for example) it is liable to be missed altogether and in the writer s experience this applies to Obermayer s reagent (0.2 per cent ferric chloride in hydrochloric acid) nitro hydrochloric acid potassium chlorate in hydrochloric acid and others

The writer has found that *technical* concentrated hydrochloric acid is a more satisfactory reagent although not all batches of the acid are suitable It must have the pale green tint usually associated with this quality of acid and though routinely employing the B D H preparation the writer has had batches which proved unsuitable The latter have always been of a lighter colour The oxidizing agent concerned does not appear to be nitrate nitrite perchlorate or ferric chloride singly since it has not been possible to prepare an equally satisfactory reagent from pure hydrochloric acid by the addition of equivalent amounts of these substances separately

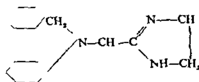
Test —To 5 millilitres of urine add 6 or 7 millilitres of technical concentrated hydrochloric acid if indican is present an immediate darkening of the mixture occurs and

NEOANTERGAN (French Society of Chemical Manufacturing Rhône—Poulenc) (p methoxyben yl pyridyl-dimethylethylenediamine) and *ANTHISAN* (England May & Baker)



(Bovet Horclois and Walthert 1944 Bonvalet and Decourt 1944 Decourt 1945)

ANTISTINE (Swiss Ciba) nd *ANTISTIN* (England Ciba)
(? [ph nyl benzyl aminomethyl imidazoline)



(Meier and Bucher 1946 S hindler 1946 Brack 1946)
Note For therapeutic purposes the hydrochlorid or other salt of the above bases is used

Of these compounds only Benadryl Antistin and Anthisan are at present gener ally available in Great Britain* Antistin and Anthisan are both produced in tablet form (0 1 gramme) for oral administration and in solution for parenteral injection Benadryl is put up in capsules (50 milligrams) and in an elixir (10 milligrams in 4 millilitres) for oral administration a preparation for parenteral administration is also available

Pharmacological studies in animals have demonstrated that these substances have three main actions (i) they alleviate bronchial constriction caused by hist amine and anaphylactic shock (ii) they prevent the vasodepressor effects of histamine and (iii) they antagonize spasm of smooth muscle Numerous experi ments in animals have shown that th re is a wide margin of safety between effective and toxic dosage

Therapeutic dosage

The average adult dose is 50–100 milligrams by mouth 3 or 4 times daily preferably administered after meals and at bedtime In severe cases either acute or chronic this dosage may be inad quate to achieve satisfactory symptomatic control In these cases as much as 300–400 milligrams or more per day in dos s of 50 or 100 milli rams may be required during the initial period of treatment In acute cases the patient should b instructed to await the effect of the initial dose for at least 2 or 3 hours before a further dose is considered In this type of case the treatment may be started with the average dosage of 50–100 milligrams given

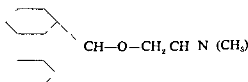
* Pyribenzamine is now coming on the market and an elixir Anthisan is also available

The starting point of their development was the demonstration by Fourneau and Bovet in 1933 that certain phenolic alkylamine ethers possessed the property of inhibiting the action of histamine This led to a systematic examination of the Fourneau series of synthetic chemicals by workers at the Pasteur Institute (Staub and Bovet 1937, Staub 1939) and stimulated research on related substances by other workers chiefly in France and the United States of America Many of the earlier substances examined had to be discarded because of toxic effects but there has been evolved a series of compounds of relatively high efficiency and low toxicity They are nearly all chemically related, and are either synthetic ethylenediamine derivatives or benzhydryl alkamine ethers although one of the newest is an imidazoline compound (Table V)

TABLE V

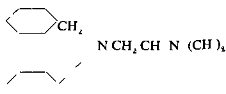
THE NEW ANTIHISTAMINE DRUGS
(*Harley* 1947)

BENADRYL (American Parke Davis)
(β dimethylaminoethyl benzhydryl ether)



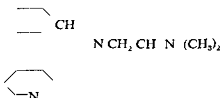
(Loew Kaiser and Moore 1945 Loew and Kaiser 1945 Wells and his colleagues 1945)

ANTERGAN (French Society of Chemical Manufacturing Rhone—Poulenc)
(phenyl benzyl dimethyle hylenediamine)



(Halpern 1942 (a) and (b) Gate and his colleagues 1942 Parrott 1942)

PYRIBENZAMINE (American Ciba)
(pyridyl benzyl dimeth lethylenediamine)



(Mayer Huttner and Scholz 1945 Rennick and his colleagues 1945 Mayer 1946)

and by clinical trial one or other may be found superior to the other two in different cases of apparently the same clinical type although the general impression has been gained that Benadryl and Anthisan are perhaps more effective in those conditions in which an extrinsic allergen of the inhalant or food type is involved and that Antistin may be more effective in certain conditions involving intrinsic and bacterial allergens but exceptions do certainly occur

Indications for therapy

Urticaria and angioneurotic oedema were the first allergic conditions reported to be relieved by the antihistamine preparations Curtis and Owens (1945) treated 18 patients with Benadryl of these 11 responded with complete disappearance of the condition except for occasional non pruritic lesions Three patients improved sufficiently to discontinue the treatment These good results were confirmed by numerous other observers (McElin and Horton 1945 O Leary and Farber 1945 Shaffer Carrick and Zackheim 1945) in over 80 per cent of cases The conditions included acute and chronic urticaria and angioneurotic oedema cold urticaria dermographia and urticarial reactions from sulphonamides penicillin insulin liver extract aspirin therapeutic sera and insect bites

In *hay fever* and *allergic rhinitis* the drugs are apparently as effective as in urticaria most observers obtaining symptomatic relief in about 75–80 per cent of cases (McElin and Horton 1945 Eyermann 1946 Koelsche Prickman and Carryer 1945) In other types of allergic rhinitis the response on the average was less satisfactory

Results in *asthma* have generally been rather disappointing except in children (Feinberg and Friedlaender 1945 Levin 1946)

Various *dermatoses* characterized by tissue oedema erythema and pruritus—such as erythema multiforme eczema pruritus vulvae and ani rosacea and others—have been reported to respond although the results in allergic contact dermatitis have been less striking (Friedlaender and Feinberg 1946 O Leary and Farber 1946 Pinkus 1946)

Though there is no doubt that the introduction of these new synthetic antihistamine drugs repre ents one of the greatest advances in the palliative treatment of the allergic diseases since the discovery of the action of adrenaline it is necessary that enthusiasm should be tempered with a sober appreciation of their limitations and the fact that they are new palliatives and not new cures should be borne in mind

CONCLUSION

Finally it must be emphasized that it should be a basic principle of treatment not to regard specific immunological methods as the be all and end all of the treatment of allergic patients but to accord due recognition to the other aspects of the individual case and not to treat the disease to the exclusion of treating the patient Allergists in common with a number of fellow experts tend to the isolationism brought about by over specialization The warning of the old Persian proverb still applies When you go to a general practitioner he tries to treat what you ve got but when you go to a specialist you ve got what he treats

3–4 times daily, and the total daily dose is increased by 50–100 milligrams each day until satisfactory results are achieved A dosage of 400–600 milligrams per day must be regarded as the maximum When partial or complete relief is obtained the dosage can usually be cut down and a maintenance dose of 50–150 milligrams per day is *often sufficient to prevent recurrences In all cases the optimal daily dosage* must be determined by clinical trial In conditions such as pruritus, which are usually more disturbing at night, the bedtime dose may be increased and the day time dosage reduced

Infants and children may be treated on the basis of body weight The average *daily dosage varies from 20–100 milligrams*

Generally speaking in acute cases the response to the drug is prompt If no effect *is noted within 3 hours the dosage may be inadequate If a trial of increased dosage* over a period of 12–24 hours does not show reasonably satisfactory control of symptoms the treatment must be considered unsuitable In milder and more chronic conditions when a low daily dosage is being administered a longer trial period may be necessary

Parenteral injection should be reserved for the initial treatment of acute attacks when oral treatment is impracticable or insufficient A dosage of 50–100 milligrams by the subcutaneous intramuscular or slow intravenous routes may be used Usually about 3 injections in 24 hours are regarded as the maximum One or two cases of severe reaction to parenteral therapy have been reported so that it should not be used indiscriminately, similarly the possibility of some oxytocic action calls for caution in the administration of such injections to pregnant women until further information is available

Side reactions and their management

The most common side effects are drowsiness dizziness nervousness lassitude, nausea and dry mouth occasionally more severe reactions occur Such reactions do not always bear a direct relationship to the size of the dose administered although many patients who experience these side reactions initially may be well able to continue the treatment on reduced dosage Gastric discomfort may be reduced to the minimum by giving the drug immediately after a meal or with a glass of milk and a biscuit *Mild sedative effects are not altogether undesirable in many* patients particularly with reference to a night time dose of the drug but when such effects become more severe especially during the day time measures for their relief may be considered The administration of caffeine ephedrine or small doses of Benzedrine is frequently sufficient to prevent or alleviate these reactions (In view of these sedative effects it must be noted that hypnotics and sedatives particularly the barbiturates and opium derivatives should only be administered with extreme caution to patients taking the antihistamine drugs) In certain cases the occurrence of marked *side reactions may preclude further administration of the drug*

Some side effects particularly somnolence appear to be more marked with Benadryl than with Antistin or Anthisan so that the choice of the preparation to be employed may be influenced to some extent by the question of whether a sedative side effect is desirable or is to be avoided The writer s experience with these drugs does not afford any very definite information regarding their relative indications

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the clinical picture is that which is usually accepted as eczema These observations seem to me to go a long way to showing the similarity one might even say the oneness of the condition which is called by some eczema by others dermatitis Of course like all other simplifications it does not give all the details but it is very strongly supported by the statement of Bruno Bloch (1929) that one can produce in them [that is normal persons sensitized to the primrose] every clinical macroscopic and microscopic histologic change wh ch is considered characteristic of true Eczema It is only too well known that a patient may begin his troubles with a localized contact eruption and then develop a widespread and symmetrical eruption which conforms to all the criteria of eczema This will persi t suffering remissions and relapses in spite of all the best efforts to avoid *repetition of the original* contact irritants in exactly the same way that the condition called constitutional eczema persists in spite of all our best therapeutic efforts The mechanism of this sensitization or allergy is not at all clear though *there is some evidence to show that the spread of it is* through the epidermal cells themselves and not as is usually stated by the blood *stream* It seems quite probable that the mechanism involves something very analogous to Lewis s H substance *Many and varied have been the investigations undertaken to find an* explanation for the change in the reaction of the skin *So far all* these investigations have failed to show the existence of any metabolic disturbance which is common to all or even to *many types of* eczema and the mysterious change which we call hypersensitivity remains a mystery So far as I can find cutaneous hypersensitivity ha not been shown to exist at birth but *it is evident that* it may be acquired at a very early age

That there are many cases of eczema in which an *internal* agent of toxic origin appears to play the chief part *cannot be d nied Even in these cases however it* may be that this agent acts as the detonator in an already hypersensitive skin or it may render the *skin* hypersensitive to usually banal *external irritants* Ingram (1935) has *well said that the external stimulus* to eczema can be anything under the sun *including the sun*

It would appear then that this altered capacity to *react* which is present in the skin is an essential factor *in* the production of *eczema* Allergy is the word suggested for this altered capacity to *react* and the adjective allergic is only *correctly* applied to patients or tissues Diseases are not allergic and to speak of allergic eczema is not only *incorrect* but runs the risk of *redundancy* or the unnecessary use of words These remarks *do not* apply to certain eruptions about the inclusion of which under the title of eczema there is dispute They are certain itchy eruptions some infantile some otherwise in which there is a definite association with asthma hay fever and other so-called allergic diseases

What I have *attempted to emphasize* is that the eruption which is evidence of the altered *reaction* of the hypersensitive skin is one and the same whether it be called eczema or dermatitis There is much to be said for the compromise term *e zematous* dermatitis

AETIOLOGY AND PROVOCATIVE FACTORS

A diagnosis of eczema is *really only a* label given *to the* clinical picture and it is vital that every attempt should be made to discover the und rlying cause of the

CHAPTER 10

ECZEMA

J E M Wigley

INTRODUCTION

Eczema is probably best regarded as a peculiar reaction of the skin which may be provoked by a very large variety of causes or provocative agents Some of these agents may be of an internal or toxic nature though by far the greater number are of external origin but the essential change is the altered reaction of the skin itself In 1906, von Pirquet suggested the word allergy to designate an altered capacity to react , whether it be of the whole organism or only of some of the tissues and this altered capacity to react is remarkably well shown in the condition known as eczema The sequence of events described by Hebra (1868) is a comparatively simple way to understand how this is so An area of apparently normal skin is gently rubbed with some well recognized irritant in his example croton oil The area becomes reddened feels a little hot and may become a little swollen If no further application is made the redness subsides there is some slight scaling or desquamation and within about 24 hours the whole area of skin has returned to its apparent normality This is the normal protective reaction of the skin to irritation which can be observed times without number by all of us Under certain circumstances this reaction can become altered the circumstances are broadly as follows

(1) Repeated application of the irritant

(2) Greater strength of the irritant than the skin can deal with by its normal reaction

(3) A state of hypersensitivity of the skin which may be inherited but is more often acquired

If in the previous circumstances the irritant (croton oil) is applied more than once, the initial redness will become more vivid the swelling more marked (oedema) and small vesicles will appear on the surface These vesicles may rupture, or there *may be a diffuse oozing from the surface (weeping) of a serous fluid* which stiffens linen and which will dry to form crusts the whole process will be accompanied by a varying degree of irritation at times severe This lesion which is usually referred to as a local or irritant dermatitis may still quieten down through a stage of scaling, papule formation and some thickening though it may take a very long time to do so On the other hand if there is continuance of contact with the irritant and quite often if there is not any continuance the local condition may persist and lead to a more or less generalized sensitization of the skin This is shown by the appearance of similar areas of eruption to the original more or less symmetrically distributed over the body The time for this sensitization to show itself is usually some 4–20 days after contact with the irritant and when it has become evident

such a history it is of the utmost importance not to be influenced by the effect of substances to which custom has attributed often erroneously the capability of producing eczema The examiner should try to judge every event by the existence of facts and not be influenced by what should have occurred Not the least difficulty will be that of convincing the patient of the necessity for suspecting even the seemingly most innocuous substances Eczema has for so long been regarded as being of internal origin that many patients will be surprised or even offended if it is suggested that the gouty eczema is due to wearing dyed gloves or sock suspenders The time and energy spent will not be grudged when it is realized that this is the dermatosis in which the prospect of finding the cause is greatest and in which the practical results obtained are the most gratifying

It is not possible to go into any great detail about the form this history taking should follow but some general indications may serve as a guide in the search for the suspected provocative agent

Site of appearance or predilection of eruption

The face (eyelids) and scalp are first affected by hair dyes cosmetics nail varnishes and hatbands the neck and face (eyelids) by furs fur dyes collars scarfs flowers and similar articles the hands and forearms by occupational substances such as soaps cleansers and gloves the torso is affected by silk wool other materials dress shields corselet belts (girdles) substances used in massaging bath salts and the like the thighs by such things as suspenders the feet and legs by shoe leather shoe polishes sock materials and suspenders the spectacle areas by metal or artificial tortoise shell and so forth

Oedema of the eyelids especially in conjunction with eczema anywhere about the head and neck is always very suggestive of an external irritant and usually one of some degree of volatility

Occupation of patient

In assessing this factor it is necessary to know or to become acquainted with the multitudinous substances which represent the hazards of different occupations It is quite impossible to give even an approximate list of these but they may conveniently be divided into two groups

(1) Primary irritants which cause an eczematous eruption on the skin of the vast majority of all people handling them Examples are carbon tetrachloride and poison ivy

(2) Sensitizing irritants in which repeated contact is usually necessary to produce the eczema Examples are alkalis cement and plastics

In assessing the occupational factor in any case it is important to remember that the alkaline soaps degreasers and other cleansing agents used to remove visible evidence of toil are often as much a factor in producing the eruption as the noxious agents which are far more commonly blamed

Hobbies and habits of the patient

In the amateur photographer the various chemicals are suspect in the horseman leather leather polishes and saddle soap in the violinist rosin chin rest wood or

eruption if rational, and *possibly successful treatment is to be carried out* As I have pointed out the eruption which we call eczema is the outward and visible sign of the inward and allergic state of the patient s skin What is the provocative agent which has set off that altered *reaction in the particular case under consideration*, in other words what is the detonator ? Broadly speaking the detonators may be placed in two large groups

(1) *Those which are external to the body and* act by actual contact with or reasonably close proximity to the skin

(2) Those which are within the body and act most probably through the blood stream These substances may be ingested or inhaled or may be products of disordered metabolism

For very many years even centuries dermatologists and others considered the latter as the more important group and dyscrasias or diatheses were largely invoked as causes of eczema In more recent and pseudo scientific language lack of calcium lack of vitamins too much acid , auto intoxication worry and of course nerves have carried on these vague theoretical generalizations None of these factors has been consistently proved to exist in any series of cases but they have continued chiefly as an apparently impressive cloak for ignorance, satisfying the little learning which the quasi scientifically half informed public loves to think it possesses

That the provocative agent is of internal origin in some cases of eczema cannot be denied The example which immediately springs to the mind is the eczematous eruption which may appear at any time during the course of injection of the N A B compounds gold salts and the like but even here it may be difficult to quite exclude an external detonator In the words of Bloch (1929) The more pains one takes in the effort to find the cause in cases of eczema as regards both the history and the functional tests the more exogenous factors will be found as the real basis for this disease This view has been shown to be correct by practically *all writers* and workers since then and there can be no doubt that eczema should not be considered as due to an internal cause until every attempt has been made to exclude *external provocative agents (irritants) as the principal factors*

How is this to be done? It may be quite easy as in cases in which the eczema follows the use of hair dyes or strong cleansing agents the wearing of irritant clothing or ornaments the use of unsuitable remedies or the *handling of certain* plants such as the primrose or chrysanthemum when it appears first on the *part of* the skin exposed On the other hand it may be extremely difficult especially when one *remembers the universal distribution of possible irritants and the* almost unbelievably small quantities which may produce even the most severe reactions Here we can observe the tremendous variation in susceptibility to sensitization on the *part of different individuals* as well as the mystery of allergic memory The original sensitizing contact may have occurred in the nearly forgotten past

The first approach is by way of the history The proper taking and evaluation of the history *may be of greater* practical help than are all the other investigative measures combined (Sulzberger 1940) This is of necessity arduous and time consuming and may call for ability both in detection and cross examination which *would have* done credit to Sherlock Holmes or Lord Birkenhead In the taking of

such a history it is of the utmost importance not to be influenced by the effect of substances to which custom has attributed often erroneously the capability of producing eczema The examiner should try to judge every event by the existence of facts and not be influenced by what should have occurred Not the least difficulty will be that of convincing the patient of the necessity for suspecting even the seemingly most innocuous substances Eczema has for so long been regarded as being of internal origin that many patients will be surprised or even offended if it is suggested that the gouty eczema is due to wearing dyed gloves or sock suspenders The time and energy spent will not be grudged when it is realized that this is the dermatosis in which the prospect of finding the cause is greatest and in which the practical results obtained are the most gratifying

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wood finishes in the mah jongg player the lacquered tiles, in the golfer plants and grasses leather club polishes and similar substances In people who keep domestic animals substances employed in their cleanliness such as lime wash for fowl houses must be borne in mind Contraceptives and douches must be remembered in cases in which the eczema is primarily situated about either male or female genitalia

Cosmetics whether powders hair dyes nail varnishes or their removers, mascara perfumes deodorants depilatories antihydrotics, face creams wrinkle removers hair lotions setting lotions and similar substances may all have to be considered Children s toys and playgrounds may provide the clue to the cause of eczema as well as the various furnishings and decorations of rooms and the substances used in their cleaning

In all these cases it is necessary to consider not only the substances used by the patient but also those used by friends playmates and intimates

Remedies used in previous treatment

This is most important and may well include substances which have been ordered as well as those advocated by advertisement or recommended by friends In this group *all the sulphonamide and penicillin applications are particularly suspect* as are local anaesthetics of the Percaine and benzocaine type as well as Antipeol These are especially potential sensitizers At the same time it must never be forgotten that even the most universally soothing applications may irritate or sensitize some patient s skin

HISTOPATHOLOGY

Essentially the changes in eczema are those of oedema parakeratosis and acanthosis with vesicle formation in the epidermis and vascular dilatation oedema and cellular infiltration in the corium The microscopical appearance of sections varies greatly according to the stage of the disease

CLINICAL APPEARANCES

Eczema is an acute subacute or chronic inflammatory reaction of the skin It is essentially multiform in its manifestations The cardinal features consist of erythema superficial oedema and an inflammatory cellular infiltration which are responsible for papules vesicles exudation crusts or scales Itching is practically always present and may vary from slight annoyance to intolerable and maddening distress it is frequently paroxysmal in nature and is apt to be worse at night The redness may vary from the vivid scarlet of the acute form to the dull red or even purplish colour of the chronic type In long standing cases there are usually cracks and fissures along the lines of flexion and the skin may become toughened and thickened giving the cross hatched appearance which has been likened to shagreen (Fig 87) The results of scratching are usually visible in the form of linear and irregular excoriations whilst in the essentially papular form almost the whole area may be studded over with small blood crusts The eruption is always characterized by the presence of more than one type of primary lesion but there is usually one predominating *This makes it convenient to describe the phases of eczema according to the predominating lesion*

Erythematous eczema

Erythematous eczema is most commonly seen on the face (Fig 88) and often in an acute phase in individuals exposed to wind and weather or sun Bright red hot and tense blotches appear which may coalesce into ill defined patches They may be difficult to distinguish from erysipelas but there is seldom any constitutional disturbance and the erythema is usually broken up by areas of normal skin The outlines of the erythema are usually indefinite and the colour fades gradually into



Fig 87—Chronic eczema of the hand



Fig 88—Acute eczema of the face

the surrounding skin Scratch marks are seldom seen but there is often considerable oedematous swelling When the eyelids are much affected it is very strong evidence that the eruption is the result of contact with or proximity to, external irritants such as chemical cleaners floor polishes and soap powders Very many cases of so called angioneurotic oedema can be shown to belong to this category This form of eczema like all others shows a great tendency to relapses and in chronically recurring cases the thickening of the skin can cause marked deformity and disfiguration of the skin of the face

Papular eczema

In papular eczema the principal feature is the aggregation of papules which may or may not be on an erythematous base The papules are rounded or acuminate and occasionally appear without any preceding erythema when they form a chronic type of eczema usually associated with intolerable itching A minute vesicle may be formed surmounting many of the papules and blood-crusted tops to them showing evidence of scratching are usual The papules may be arranged in groups of varying size, situated anywhere on the skin but showing some predilection for the extensor aspects of the arms and thighs When persistent rubbing may transfer them into flat shiny lesions which may be difficult to distinguish from lichen planus The violent scratching and laceration of the skin usually provoked by the intense irritation of this phase of eczema frequently lead to pyogenic infection and the whole area may become covered with purulent scabs

Vesicular eczema

It is the appearance of vesicular eczema especially when acute which originally suggested the name of eczema (ἐκζέω to boil over) The intense oedema causes the appearance of numerous vesicles water blisters , which are practically always on an intensely erythematous base These vesicles rupture easily either by external trauma or by their own pressure and a clear yellowish serous fluid exudes which has the property of stiffening linen This fluid coagulates to form sticky yellowish crusts When weeping is a marked feature the term eczema madidans is often used This vesicular phase may be seen on any part of the cutaneous surface even on the scalp but it is more commonly found where the epidermis is thinner as about the flexures of joints forearms and scrotum The accompanying irritation is variable in its intensity and may be replaced by a burning sensation especially in the earlier and more acute phase

Lichenified eczema

In long standing cases of eczema often accompanied by paroxysms of irritation of varying degrees of intensity the affected areas become thickened and take on an appearance very reminiscent of shagreen The colour may remain red but more usually it is of a brownish dirty hue The natural lines of the skin are exaggerated and the area feels unusually tough If examined closely it is seen to be made up of closely set flat polygonal papules which gradually fade into the surrounding skin This lichenification as it is called is usually the result of oft repeated friction The surface is usually dry but particularly violent scratching may result in the surface being partially covered with blood crusts (Fig 89)



FIG 89 —Chronic eczema

Pustular eczema

Although the phase of pustular eczema is more usually the result of secondary pyogenic infection of one of the preceding phases in some cases the eruption may appear pustular from the outset There are also cases in which a simple pyogenic infection such as impetigo or sycosis barbae may provoke the eczematous reaction This more usually follows injudicious treatment of the pyogenic lesion and it is especially likely to follow the external application of the sulphonamide or penicillin preparations both of which are well recognized potential sensitizers of the skin The most usual sites for pustular eczema (pyodermia or pus-coccal dermatitis as it is often called) are the scalp the face and the legs The crusts are likely to be of a yellowish colour soggy in consistence and rather large in size When removed they have a bright red shiny surface which has an appearance best described as very near weeping The accompanying symptoms are very variable in their presence and irritation is seldom severe Local adenitis may be present but this is unusual

Discoid or nummular eczema

This is a localized patchy variety of eczema which may arise as evidence of a generalized sensitization process but rather more usually it appears without any preceding eruption It consists essentially of moderately well defined plaques of different sizes which frequently give the impression of being raised above the surrounding skin surface hence the name nummular or coin like The plaques are usually erythematous and predominantly vesicular There is generally some evidence of exudation and crusting perhaps more marked about the periphery of the plaque The plaques are more commonly found on the upper limbs with the legs and trunk less frequently affected Irritation is usually severe The lesions generally appear suddenly and simultaneously do not increase in size and disappear in a few weeks under appropriate treatment Relapses are the rule rather than the exception The general health is usually little affected and careful investigation reveals no abnormality of other organs A search for external irritant causes by patch tests or similar methods is almost uniformly unsuccessful The term neuritic eczema has been applied to this variety but there seems little justification for it

the surrounding skin Scratch marks are seldom seen but there is often considerable oedematous swelling *When the eyelids are much affected it is very strong evidence* that the eruption is the result of contact with or proximity to external irritants such as chemical cleaners floor polishes and soap powders Very many cases of so called angioneurotic oedema can be shown to belong to this category This form of eczema like all others shows a great tendency to relapses and in chronically recurring cases the thickening of the skin can cause marked deformity and disfiguration of the skin of the face

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Aetiology

The aetiology of infantile eczema has provoked much discussion and much disagreement There is really little evidence to support the theory that dietary factors alone play a principal part External irritation and exposure especially to cold are important factors and cases have been reported in which an almost specific sensitivity to dandruff scales from the mother s scalp soap powders used in washing the baby s clothing and similar external substances has been shown An infant s skin is sensitive and delicate and this sensitization is easy to understand The general irritability produced by dentition or by mild gastro-intestinal upset cannot be without its effect on the hypersensitive skin but there does not seem any really satisfying evidence that these conditions are entirely responsible for infantile eczema I have never observed a case of infantile eczema recover from the treatment of such internal disorders alone The frequently used intradermal or scratch tests usually give disappointing results though judiciously used patch tests may give really valuable information

DIFFERENTIAL DIAGNOSIS

When the multiformity of the lesions the usual tendency to weeping the accompaniment of irritation and the great inclination to relapses are remembered there should be little difficulty in recognizing eczema Nevertheless some of the conditions commonly mistaken for it should be mentioned

Erythema multiforme

The eruption of erythema multiforme is essentially bilateral and symmetrical and the sites of election are the forearms and backs of the hands and the shins and dorsa of the feet these two sites may be affected separately The individual lesions are essentially plaque like erythemas have a smooth velvety feel and often a ringed or target like appearance

Exfoliative dermatitis

This is a name very frequently misused The condition is usually a universal dry eruption with much scaling but little infiltration The multiformity of the lesions of eczema is in sharp contrast and it is extremely rarely that eczema does not spare some areas of skin

Lichen planus

Smooth flat topped burnished papules of a characteristic mauve or violaceous colour are typical of lichen planus Lesions in the mouth on the glans penis or about the vulva are often present Vesicle formation is very rare and weeping is almost unknown whilst the brown to blackish pigmentation left by the fading lesions of lichen planus is more than suggestive Papular eczema may be difficult to distinguish from lichen planus but a careful study of the individual lesions will settle the diagnosis

Intertrigo

Intertrigo is a name used to describe moist red hyperaemic areas which occur about the skin surfaces which are in apposition that is the submammary regions

Many other qualifying names are often applied to eczema, but they usually only emphasize the predominating phase of individual cases, or else refer chiefly to the area mainly affected One term, the *eczema craquele* of French writers describes a rare form of eczema In this type a slightly reddened surface with irregular, very superficial cracks separating large thin polygonal flakes or scales bears a marked resemblance to crackled china The condition often involves large areas of skin is particularly apt to affect the legs and is accompanied by itching and burning and a peculiar sensitiveness to temperature changes It is often aggravated by frosty weather

Infantile eczema

Infantile eczema is worthy of some special consideration as although it is not fundamentally different from eczema of more mature subjects it is one of the commoner skin affections of infancy It is usually a very distressing condition especially to the parents, and not without serious risk to life should affected areas become septic from careless or inadequate treatment Infantile eczema seems to affect breast fed and bottle fed babies in about equal proportions though it is somewhat more common in males It is almost equally as prevalent in private as in hospital practice but owing to better nursing and hygiene the private cases are usually milder in character Heredity seems to play a small part though in the cases which develop into the eczema–asthma–hay fever syndrome (Besnier's prurigo) there is usually some evidence of familial hypersensitivity

Site and development

The eruption first appears most commonly on the cheeks and forehead though it may originate in the scalp or on the napkin area It may remain confined to the original area but it is not uncommon for more or less symmetrical patches to appear on the trunk and limbs In severe cases the whole cutaneous surface may be reddened, oozing and crusted and the baby presents an appearance very much like the proverbial boiled lobster It is remarkable how the general health is usually maintained, though in extensive cases the severe irritation with its consequent scratching and sleeplessness may seriously impair this It should be remembered that babies occasionally die quite quickly without any obvious worsening of their eczema and without any really satisfactory post mortem explanation (Davies 1940)

The eruption usually begins as ill defined erythematous patches associated with itching and burning These may fade rapidly only to be replaced by an eruption of small pink papules on an inflamed base which eventually become vesicles and weep on being scratched Often there are extensive denuded weeping areas which are quickly crusted over by the coagulated exudate Pyogenic infection easily follows and, unless adequately dealt with may have fatal results

The irritation is a very marked feature often out of all proportion to the visible eruption and a severe case of infantile eczema can produce a pitiable sight Fortunately most cases respond to suitable treatment and make a complete recovery between 2 and 3 years of age

Miliaria or prickly heat

This very troublesome affliction of hot climates may be confused with eczema but the eruption is characterized by a pricking sensation rather than by itching The vesicles do not occur on an inflamed base and they show little tendency to rupture The fluid contained in them is more watery and does not tend to coagulate as in eczema the lesions are never confluent The disease runs an acute course in contrast to the chronicity of eczema

The patch test

The careful taking of the history which may need to be repeated many times will frequently be found to have established the identity of the causal agent when further testing will be unnecessary On the other hand this history taking may only have narrowed the ground or have made so many substances suspect that skin tests must be undertaken in order to support or complement the history and the clinical findings Haphazard skin testing may well incriminate so many substances including many that the patient cannot reasonably have come into contact with that the resulting confusion may be more bewildering than the original problem There must always be a history of opportunity for exposure to the suspected substance though the fact that it may be an old history (allergic memory) will call for considerable skill in eliciting it

The patch test (or eczema test) is to be distinguished from the scratch or intradermal test Essentially it consists of applying the suspected substance to the undamaged skin and of eliciting an epidermal response in the form of an eczematous patch The scratch test is done by inserting the substance into the skin and eliciting a vascular response usually in the form of a weal Of course the best skin test is a repetition of the original contact with the suspected substance under the same conditions but obviously this is frequently not practicable

Before describing the test it should be made quite clear that all testing is to be avoided during the active phase of an acute eruption In addition to the very real risk of making the whole eruption worse and more intractable the results obtained may be quite misleading Multiple sensitivity is more likely during the active phase of an eruption and at times one may find the skin in a negative phase

Another warning is that the test should not be applied to a site where any ensuing cosmetic defect may be extremely disagreeable or disastrous to the patient The face should obviously be avoided as well as *decolleté* areas in women though in certain professions this may leave little space Consent of the patients to any testing should always be obtained after fully explaining the process to them

Procedure

A small piece of the suspected substance or a piece of white linen soaked in the solution or covered with the grease or with the water moistened powder or other material is applied to the unbroken hairl ss skin If the material can be cut into a distinctive shape it is an advantage but the overall size should not be larger than a postage stamp The material is covered with a somewhat larger piece of impermeable material such as Cellophane used photographic film or oiled silk The whole is kept in place by adhesive strapping or a bandage if the patient is known

the axillae the folds in fat babies and the chins usually known as double The surface is generally raw and secretes a watery fluid which does not coagulate like the exudation of eczema

Paget s disease of the nipple

This very rare condition is unilateral and presents a much more sharply demarcated eruption than that of eczema The nipple is usually retracted and the area feels indurated whilst the course is more steadily progressive without the remissions and relapses so usual in eczema If there is any real doubt a biopsy should always be done as Paget s disease is always carcinomatous *ab initio*

Psoriasis

The silvery, mica like scales on a salmon pink dry erythematous base and the very characteristic distribution of psoriasis should make the diagnosis clear Dry scaling and partly lichenified areas of chronic eczema may closely resemble this disease but careful study of the details will make the diagnosis clear

Pityriasis rosea

The typical lozenge shaped pink macule with its *café au lait* centre and its collarette scaling (attached about the periphery but free towards the centre) is distinctive The previous herald patch and old fashioned bathing suit distribution will usually make the diagnosis clear

Sycosis of the beard

The follicular pustules which are characteristic usually make the diagnosis clear, though some chronic cases may present difficulty

Seborrhoeic dermatitis

In seborrhoeic dermatitis the scales usually have a yellowish greasy appearance and the lesions often have a circinate outline The front of the chest the interscapular region, the scalp and behind the ears are the sites of election The picture may be confused by an eczematous reaction which is sometimes provoked in a seborrhoeic subject by scratching or injudicious treatment and in many cases a compound eruption is present which has at times been called seborrhoeic eczema

Scabies

In any patient complaining of an itching eruption the possibility of scabies infection must be excluded before anything else Many cases show eczematous lesions, usually the result of scratching or of inept treatment which may make this exclusion difficult The very characteristic distribution of scabies confirmed by the finding of burrows and preferably of the acarus should make the diagnosis clear

Syphilis

It is only in the papular and scaly forms of syphilis that any real difficulty should arise The absence of irritation the symmetrical distribution uniformity and induration of the brownish coloured lesions should indicate the diagnosis The result of the Wassermann reaction and the response to anti syphilitic treatment will decide the matter

It is obvious that the most expertly used remedies must fail if the exciting irritant is still having even occasional contact with the patient

It should always be remembered that the proper method of application of a remedy is fully as important as the choice of a suitable remedy Time should be given to explain to patients the details of exactly how and when to apply the various remedies which may be prescribed It is not much use to order a lotion or ointment and just tell the patient to go home and use it The intelligent and judicious use of a few well tried remedies is much to be preferred to the more haphazard use of many Long and complicated prescriptions of the shot gun variety may look impressive but increase the chance of using a medicament to which the patient s skin is already or will become sensitized

General management

A primary consideration is to obtain rest if not for the whole body of the patient at least for the affected area In order to do this it is necessary to control the irritation In addition to the local applications designed for this purpose it is usually necessary and almost always desirable to help their action by using general sedatives Barbiturates and salicylates are usually the most effective drugs for this purpose and it is of great interest to note that drugs which relieve pain most do not have the most adequate effect on irritation It has long been recognized that opium and its derivatives are contra indicated as they are apt to be followed by an exacerbation of the itching when their soporific effect has passed off Chloral hydrate is particularly useful in infancy and a remark I heard many years ago babies seem to thrive on chloral is I think very true Bromides are useful in long standing cases but one must always remember that they do on occasion produce acneform eruptions Better results will usually be obtained with these antipruritic drugs if they are given in divided doses spread over the whole 24 hours rather than in one larger dose at bedtime For example phenobarbitone ¼–1 grain thrice daily will relieve irritation in an adult more satisfactorily than by just giving 1 grain at night producing heavy sleep for a few hours and leaving the patient to scratch all the next day Another point is that it is usually advisable to continue the medication for some appreciable time after the eruption has disappeared and then to reduce the dose gradually rather than to stop suddenly at the first possible moment

The comparatively recent advent of the antihistamine drugs such as Benadryl Antistin and Anthisan has added to our resources in the treatment of eczema though it has not by any means solved all our problems That these drugs have valuable uses cannot be denied but individual response to them varies greatly As their effect appears to be primarily on the local mechanism which produces the exudative inflammatory reaction in the skin it would seem reasonable to expect most results from their use in the more acute and exudative phase of eczema This has been my experience and it is often most gratifying to see the rapid return to normal size and configuration of a face almost unrecognizably swollen by an acute attack of eczematous dermatitis whether that be provoked by the use of a hair dye by the handling of some chrysanthemums or by the therapeutic administration of a penicillin or a sulphonamide application It is necessary to give adequate doses and less than 50 milligrams of Benadryl 3 or 4 times a day is seldom effective Much larger doses are usually well tolerated and it is seldom necessary to continue

to react unduly to strapping A similar control application is made without the suspect substance of course It is usually inadvisable to apply more than half a dozen tests to one patient at a time The patches are left in place for 24–48 hours though the patient must be instructed to remove any or all of them at once should the irritation become intolerable Of course the patches are carefully marked When the patches are removed the sites are thoroughly cleansed and the reactions are noted A positive reaction must be more than an erythema the papules vesicles and other characteristics of eczema being essential It is also important to be certain that the reaction has not been caused by the use of a primary irritant in too strong a concentration Attention to detail and observation of the reaction for a few days will settle this

If there is no evident reaction at the site when it is first seen it is necessary to see it at short intervals afterwards as delayed reactions occur not infrequently Delay up to as many as 30 days has been reported

Evaluation of the patch test

A positive patch test suggests though it does not prove that the substance used is the cause of the presenting eczema If this supports the history part of which must be that there was an opportunity of contact about the time of the onset of the eruption the suggestion is made a reasonable certainty

A negative patch test even after the necessary delay is very much less conclusive There are many variations in the degree of sensitivity and only local sensitivity is well known The conditions of contact may not be adequately reproduced by the testing process

Summary

Briefly summarized the diagnosis of eczema is made from the consideration of the following factors

(1) The clinical appearances of the eruption and its accompanying symptoms

(2) The history, in particular that part bearing on contact with potential irritants

(3) The relapsing nature of the eruption

(4) The response to treatment

TREATMENT

There is no disease of the skin which calls for therapeutic skill in a greater degree than eczema and the successful management of a case is really something to be proud of The variety of lesions often their wide distribution the differences in age occupation environment and general health of the patients and the peculiarities in the manner in which the skins of different individuals react to different remedies both local and general all combine to make the treatment so diverse that each case must be dealt with on its own merits

The thorough search for external irritant causes which I have already described in some detail may well be looked upon as a most important part of the treatment

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them for longer than 5–7 days Some of the more resistant phases of eczema are greatly helped by these drugs and I have seen cases of nummular or discoid eczema which had resisted other remedies clear up in a most gratifying way It is fairly safe to say that, in the more chronic cases the antihistamine drugs will produce the desired effect quickly (within a week) or not at all and it is of little use persisting with them without very definite encouragement

Patients vary greatly in their response to these drugs and also to the different drugs If one fails, it is usually worth while trying another Some patients may find Benadryl acts as a stimulant whilst Antistin relieves their irritation and soothes them generally Combining the use of antihistamine drugs by day and barbiturates by night is often most gratifying but it is always necessary to watch for any toxic or side effects

Generally speaking Benadryl seems to have given the most satisfactory clinical results but it is much too early to make anything approaching a dogmatic statement

When the eruption is extensive or the lesions are severe the patient is better confined to bed This reduces the general discomfort from the friction of clothes and dressings and the variations of temperature and enables local remedies to be applied more adequately The timely use of a cradle to support the weight of the bed clothes is usually most comforting The patient is seldom seriously ill and such distractions as reading the wireless or television may be of great help As the condition subsides a change of environment becomes desirable and a stay at a health resort or spa may be of great benefit There the patient may undergo a more careful regimen and carry out treatment more willingly than at home Complete restoration to health now called rehabilitation by graduated exercise, recreation and useful amusement has been shown to be of great value and Hellier s (1948) success at Ragley Hall during World War II shows what can be done in that way

Aetiological or causal management

It would appear reasonable in what has aptly been called causal management of cases of eczema to eliminate or reduce the hypersensitive or allergic state of the skin of the sufferer The attempt might be made either by specific or non specific methods It may be that various internal remedies either dietary changes or the administration of nearly all the known vitamins may help the skin to protect itself against eczema producing substances but there seems a curious one might say noticeable lack of unanimity in writings or personal statements about the results obtained The same remark seems to apply even more noticeably to views on the efficacy of such attempts at non specific desensitization as autohaemotherapy artificially produced hyperpyrexia (by intravenous injections of T A B or other measures) which have seldom if ever given any really lasting good results in the writer s hands

On the question of specific desensitization there is still wide disagreement In a few cases of eczema due to plant contact, for example poison ivy good results have been claimed by injection or oral administration of specific allergenic plant oils The subject is still under active investigation and it may well be that ultimately specific desensitization will become a practical measure

Internal treatment

There is no medicine which has a curative effect in eczema (Sequeira 1919) This is as true as on the day it was first written The lengthening list of remedies is as strong support for this as could be wished Of course any obvious derangement of general health should be suitably dealt with Much help will be given by measures to relieve constipation or stasis dyspepsia or the symptoms of hypertension Calcium in various forms sodium thiosulphate either by mouth or by intravenous injection a 10 per cent strontium bromide in glucose solution (Ekzebrol) have all had good reports in the literature at times but they are in no way specific It is an unqualified relief that arsenic is no longer used as a universal remedy in all types of eczema

Of the undoubtedly great value of sedatives I have already written The antihistamine drugs appear more limited in their effects but are often of help

Treatment by radiation

Ultra violet radiation —Generally speaking ultra violet light is contra indicated in eczema The effect of these rays is stimulating and consequently is more likely to irritate than to soothe an already hypersensitive skin It must be admitted however that occasionally a very chronic case of non inflamed eczema may derive great benefit from the general tonic effect of light baths

Radiotherapy —Apart from the immediately acute phase there are very few cases of eczema which are not helped by judiciously judged exposu e to x rays This applies particularly to the chronic lichenified lesions which usually respond in an almost magic way It cannot be stressed too strongly that such x ray treatment should only be undertaken by an experienced dermatologist as there is much more judg ment required than just working out the dosage from mathematical tables

External or symptomatic treatment

Most topical applications and dressings act almost as much by virtue of their protective and soothing properties as by any attack on morbid processes One of the most important functions is to help the internal administration of sedatives already considered in some detail to allay irritation

A very useful appliance for controlling irritation is the ordinary wooden splint or a well fitting one which can be made from plaster of Paris When made to fit comfortably this will frequently prove so successful that the patient will insist on its application to prevent the nocturnal or even diurnal subconscious scratching Judicious splinting is a very important part of the management of cases of infantile eczema The choice of topical applications suitable to the predominating phase and clinical appearances of eczema is of paramount importance It is by no means unimportant whether a lotion cream ointment or paste is used at a particular time and some general indications may be given as follows

(1) In the acute vesicular or oozing phases in which the skin appears bright red glazed angry or moist

(a) Wet dressings such as normal saline solution 1 per cent aluminium acetate potasium permanganate 1 10 000–1 1 000 solution sodium bicarbonate solution boric lotion 1 per cent

(b) Lotions such as Lotio Calaminae (*B P C*) perhaps with $\frac{1}{8}$–1 per cent silver nitrate

(c) Powders containing boric acid zinc oxide and talc Fissan powder

(2) In the subacute, less oedematous angry or glazed looking phase

(a) Lotions such as 5–20 per cent liquor picis carbonis

(b) Creams Lotio calaminae oleosa Cremor Zinci (*B P C*) Lotio Calaminae (*B P C*) and Eucerin in equal parts

(c) Pastes Lassar s zinc paste perhaps containing 5 per cent Liquor Carbonis Detergens or 2 per cent crude coal tar

(3) In the chronic torpid or lichenified phases

(a) Ointments containing tar, resorcin or salicylic acid

(b) Crude coal tar painted on full strength or included in Lassar s zinc paste

To any of these local antipruritics the following may be added Menthol $\frac{1}{4}$–1 per cent phenol $\frac{1}{2}$–1 per cent, benzocaine 3–10 per cent and spirit of camphor 2–4 per cent These must always be used with great caution as they are all potential sensitizers of the skin

The various antihistamine drugs are being used for external application chiefly in the form of creams in water soluble bases Published results have been scarce up to date but the general impression does not appear too hopeful

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CHAPTER 11

ROSACEA INCLUDING SEBORRHOEA OLEOSA, ACNE VULGARIS AND HYPERIDROSIS

GEOFFREY HODGSON

SEBORRHOEA OLEOSA

Definition

SEBORRHOEA oleosa may be defined as an excessive oiliness of the skin associated with hypersecretion of the sebaceous glands

Symptoms

The condition shows itself on the scalp face and sternum on the shoulders between the scapulae and around the genitals other areas of skin may however be affected The flux of oily seborrhoea may actually shine and glisten on the skin imparting a greasy stain to linen which is used to wipe it away The hair may become matted with grease and very rapid hair fall may occur resulting in permanent baldness On the face the orifices of the sebaceous glands appear patulous and are plugged with sebum which may be squeezed out of the follicles on pressure like white worms The patient usually has a sallow complexion The crevices of the umbilicus and the genitals may promote retention of the oily secretion and predispose to inflammation from infecting organisms This is particularly so in men in whom inflammation may begin in the corona associated with smegma retention and a tight prepuce

Aetiology

Seborrhoea oleosa may occur at any age but is most common in adolescence when the glands are most active The sex distribution is equal but dark skinned or brunette individuals are very prone to develop this condition It may be physiological in Negroes A familial association is common as may also be a tendency to early baldness It is worsened by obesity by general ill health or by cachectic disease such as tuberculosis An oily seborrhoea is seen in post encephalitic Parkinsonian disease

Whereas it was formerly thought that micro organisms were responsible (Sabouraud 1897) it is now generally considered that there is an endocrine basis dependent upon the secretion of androgens and the general interplay of the sex hormones These hormones are derived from the adrenals and from the sex glands Barber (1948) states that it is now established that the androgens stimulate the sebaceous glands and thus produce seborrhoea whereas the oestrogens have a contrary action in diminishing the activity of the sebaceous glands On this background of oily seborrhoea occur acne vulgaris seborrhoeic dermatitis pityriasis capitis (dandruff) and rosacea

General treatment

Regular outdoor exercise with cold baths to tone up the skin and regular bathing are encouraged Light cotton underwear should be worn and frequently changed Thyroid can be used in the treatment of the overweight flabby individual A hat should not be worn as a rule The weight should be kept within normal limits and dietary restrictions should include greasy and fried foods cream excessive milk cheese, bread potatoes pastries and sweets

Local treatment

The scalp

If hair loss has already occurred the patient should be advised that the hair will continue to fall perhaps even more vigorously than formerly for 3–4 weeks the hair fall may, otherwise be mistakenly attributed to the treatment The necessity for treatment is urgent if hair loss is occurring If the scalp is covered with matted grease this may be loosened by soaking in oil or cold cream (Unguentum Aquosum *B P*) overnight The grease is then washed out by means of soap and water its removal being aided by combing A routine nightly scalp massage with the fingers and vigorous brushing of the hair with a firm brush should be instituted At first almost daily shampooing with a spirit soap or green soap shampoo or with one of the modern soapless shampoos containing sulphonated oils will be necessary, later a shampoo once or twice a week is sufficient Treatment should not be too vigorous initially as the scalp may be tender and easily inflamed Regular shampoos and the use of a spirit lotion control the average case If hair loss is occurring a spirit lotion containing tar and perchloride of mercury is applied For female patients glycerin 40 minims per ounce should be added to the lotion to prevent the hair from becoming *lank and brittle whilst the addition of a few minims of castor oil will offset* the drying effect in men Lotions are applied with the finger tips or an old tooth brush to the scalp along the parted hair For gross oiliness an occasional application of a few drops of carbon bisulphide on cotton wool for 30 seconds may be made the scalp being shampooed in the morning

The face

A sulphur soap should be used and instruction in the method of washing the face together with local applications is given as in the treatment of acne Repeated peeling, produced by means of ultra violet irradiation and sunbathing is helpful *Women should use a sulphur face powder and avoid greasy creams (see* the section on Acne Vulgaris)

The umbilicus

Careful attention to routine hygiene is necessary and dusting with boric and talc *dusting powder may be recommended as a prophylactic measure*

The genitals

The genitals should be washed with toilet soap and water The area if inflamed is bathed with 1 in 5 000 potassium permanganate solution and a dressing of Linimentum Calaminae (*B P C*) to which 1–2 per cent Ichthyol has been added is

applied on gauze strips under the prepuce In severe cases circumcision should be advised

ACNE VULGARIS

Definition

Acne vulgaris is a chronic inflammatory disease of the pilo sebaceous gland systems of the skin in which are present the comedones papules nodules and residual scarring usually associated with oily seborrhoea

Symptoms

The face back of the neck upper chest back and shoulders are mostly affected although in severe cases follicular lesions may also occur on the upper arms buttocks and thighs Most acne lesions develop from the comedones (black heads) but papular and pustular lesions also occur without comedones at follicle openings (whiteheads) Comedones are yellowy white greasy wormlike plugs of sebum retained in the mouths of the follicles and are composed of inspissated sebum mixed with horny epithelial cells exfoliated from the walls of the follicle The outer end of the comedone appears black because of discoloration and oxidation Such blackheads are commonest on the cheeks Double blackheads are the result of fusion between two adjacent follicles and clinically they appear to run horizontally under a small bridge of skin The comedone acting as a foreign body causes local irritation of the follicle by pressure it interferes with cell nutrition and it also serves as a good culture ground for pus forming organisms



FIG 90 —Acne in a young woman with comedones papules and pustules predominating

Conical red papules appear round the comedones (papular acne) and later a bead like point of pus shows on the centre (pustular acne) (Fig 90) An extension of this process together with the formation of red or bluish nodular swellings and of abscesses may produce disfiguring scars (acne indurata)

Acne scarring produces small round pit like depressions or larger flat atrophic areas which are seen usually on the shoulders and chest these scarred areas may be several centimetres in diameter Occasionally there is a formation of cord like keloidal scars A keloidal condition may also occur localized to the nape of the

neck and the occiput as areas with hard papules and hypertrophic scars with residual tufts of hair sprouting from the scarred area (acne keloid) Cyst formation results from a foreign body reaction occurring around the imprisoned sebum (cystic acne) this also occurs commonly on the nape of the neck with fluctuant boggy cysts and discharging sinuses Cystic acne and keloidal acne are both chronic conditions and are difficult to control Severe acne may occur in debilitated individuals and particularly in those patients with phthisis with cysts nodules and abscesses and with extensive scarring (acne cachecticorum) Acne conglobata is a rare type of acne with many blackheads which are often double severe pustulation indolent abscesses cysts and sinuses resembling scrofuloderma in appearance It occurs in adult men on the shoulders buttocks thighs and face The prognosis is poor

Groups of blackheads may be seen in young infants or children on the chest face forehead and back (grouped comedones) They occur idiopathically and may be familial Sometimes they seem to follow the inunction of camphorated or medicated oils to the chest Dressing the hair with a greasy brilliantine or hair cream may cause multiple comedones on the forehead

Acne necrotica (frontalis) is a chronic disease and occurs in association with seborrhoea of the scalp in adults Crops of red follicular papules and pustules appear on the forehead scalp and sometimes on the ears and nose The lesions dry to small yellowish crusts and scales which fall off leaving round depressed scars A general state of nervous instability may be present

The same gonadal influences and in particular the androgens which seem to regulate the oily flux of seborrhoea and other seborrhoeic manifestations are probably responsible for preparing the ground for acne if not for instigating its appearance It seems likely that the comedones may result from androgens stimulating keratinization in the mouth of the hair follicles Acne bacteria—staphylococci and the *Micrococcus cutis communis*—may determine the onset of pustulation, the roles of these organisms however are by no means decided The gonadal influence is seen by the effects of puberty, adolescence and the menstrual cycle upon acne whilst experimentally administered testosterone will produce acne in castrated subjects

An excessive carbohydrate or fatty diet and in particular chocolate may aggravate *some types of acne especially the pustular types*

The acne subject is often of unstable nervous make up and is prone to emotional disturbances States of nervous stress unsettlement or sexual difficulties can aggravate *the condition In young subjects home difficulties worry about* examinations and overstudy may produce temporary exacerbations Feelings of inferiority and embarrassment may lead the patient to withdraw from normal social life and may encourage neurotic tendencies Thus some unstable hysterical girls may be induced to institute a neurotic habit of picking or squeezing the spots which adds considerably to the disfigurement (*acne excoriee des jeunes filles* (Brocq)) The stabilization of the emotions and of the sexual life which results from marriage may partially explain the fact that in girls acne tends to clear up *after marriage*

Haematogenous irritation of the follicles caused by septic foci in teeth and nasopharynx or by ingestion of iodides and bromides which are excreted *via* the

sebaceous glands and by irritation from rough dirty or woollen clothes is a factor in some cases Occupational acne occurs as in chloracne and oil acne Acne usually starts at puberty (12–14 years) and peters out in the twenties Active lesions however are often seen in patients who are in the late thirties

Diagnosis

Diagnosis is relatively simple but a bromide iodide or chloral eruption may simulate acne or may coexist Such eruptions are seen after ingestion of proprietary blood mixtures containing iodides A pustular secondary syphilis would present other signs of secondary syphilis and blackheads would be absent The diagnosis of occupational acne will be suggested by the history Rosacea may be superimposed on acne

General treatment

Acne is the most neglected of skin diseases its tendency to clear up with the passing of time usually means that nothing is done for the patient This neglect can result in much scarring and facial disfigurement in interference with careers and many broken hearts and often causes grave psychic trauma especially in young girls which could have been avoided if proper treatment had been given

Clean light cotton underwear an open air life with adequate exercise sufficient sleep without late hours and the correction of constipation and anaemia are general routine principles which should be applied in treatment

Adjustment of psychological difficulties and in particular of unsettlement at home is most important Phenobarbitone $\frac{1}{8}$–$\frac{1}{4}$ grain 3 times daily may be required as temporary sedation but bromides should be avoided It is often necessary to advise the parents that they must refrain from drawing attention to the acne The patient on the other hand must accept philosophically the fact that there may be a tendency for the condition to continue for some years but at the same time should be informed that the acne is quite controllable that it is not infectious to others and that excessive scarring can be prevented by adherence to the principles of treatment Such patients should lead a normal social life in spite of their acne

Diet

Opinion as to the importance of diet is divided Probably the diet should not be curtailed much in adolescence or in underweight thin persons except in regard to chocolate cheese pig flesh shell fish nuts and highly seasoned foods Obese patients should be advised to reduce their weight The following recommendations are wise The food should be simple with plenty of fresh fruit and salads Reduction of fatty or greasy foods (fish and chips) and of the carbohydrate foods such as bread potatoes pastries sugar and sweets is advised Restriction of carbohydrates is important in pustular cases and in these cases the condition may also be worsened by excessive fluid intake and subsequent retention of fluid in the tissues when such retention occurs restriction of total fluid intake and exclusion of salt become necessary measures Salt should be un iodized and vitamins A B and C can be supplemented

Endocrine therapy

The administration of thyroid is indicated in overweight hypothyroid persons *Stilboestrol, 1 milligram daily for 6 weeks* should be given in precocious male *patients* In severe cases occurring in male patients treatment by means of subcutaneous implants of oestrogen has been successful Painful *enlargement of th* breast will require cessation of treatment and the administration of testosterone Implants should not be employed in the treatment of female patients but stilboestrol administered orally, is beneficial

Occupation and work capacity

Individuals who are subject to acne should not be employed in industries in which chlorinated naphthalenes are used (bleaching in pulp and paper factories or electric cable insulator making) as in such cases chloracne may occur They are also unsuitable for work in petrol and oil refineries and in tar pitch and sludge works The frequency with which acne and other seborrhoeic manifestations occur in association with industrial dermatitis gives the impression that seborrhoeic patients *may perhaps* be more prone to industrial dermatitis than are non seborrhoeic subjects and they should therefore be advised against industrial work in which there is a high skin hazard In oily jobs (as fitters turners or machinists) they are prone to oil acne and folliculitis but can be employed if proper attention is given to cleansing the skin after work Acne on the back is a disability in soldiers it is aggravated by tropical climates and may be irritated by the wearing of equipment In most severe cases the patients are advised not to live in the tropics The ill effects of heat and sweating are further seen in workers such as stokers and furnace men

Local treatment

Routine methods

If the blackheads are causing lesions they should be removed by means of a comedone extractor Undue force will damage the tissues, producing larger lesions Applications of hot towels to the face for 10 minutes will help to loosen the blackheads and very large blackheads may sometimes be withdrawn on the under surface of a piece of adhesive plaster which has been left on overnight

Picking or squeezing of the pimples should not be allowed and pustular spots are best left to evacuate themselves They may be opened by means of a sterile needle and then dabbed with spirit or eau de Cologne Repeated bathing with a hot 4 per cent boracic acid solution is used in large blind boil like lesions In these patients too frequent visits to the mirror should be discouraged

The face should be washed with a sulphur or balsam of Peru soap and hot water 2–3 times a day using a good lather and a rough flannel the face being rubbed with a dry towel afterwards The back and shoulders may be scrubbed with a nail brush as the skin here is more tolerant of such treatment For excessively greasy skins sodium bicarbonate or washing soda is added to the water to aid degreasing and the face may be scrubbed with a soft nail brush

Local applications —A lotion is applied at night and is rubbed in with the finger tips after washing Such preparations are lotio alba and a heavy calamine lotion

to which 4 per cent of precipitated sulphur has been added If the blackheads are numerous a sulphur and resorcin paste is applied and is removed by washing with soap and water the next morning The object of treatment is to promote a mild exfoliation of the skin keeping it on the dry side The individual tolerance is found by experience if the skin becomes too sore and inflamed a cold cream may be applied occasionally at night and the strength of the lotion may be reduced or it may be applied on alternate days For very greasy skins a strong solution of lotio alba may be used or the weaker solution may be applied several times in the day Some skins will not tolerate over treatment and in red haired or fair complexioned persons with tender dryish skins irritation may be caused by sulphur in lotion form in these cases a sulphur paste an ointment or an emulsion cream is preferable Siccolam is well tolerated by such people The use of soap is always indicated in acne in juveniles but in adults if the skin is irritated an emulsion cream or skin milk can be used instead

Pustular or indurated acne

In pustular or indurated acne local treatment should be less vigorous and initial exposure to ultra violet light must be undertaken with caution Septic foci must be eradicated An electric razor is useful Hot compresses of 4 per cent boracic acid lotion or 1 5 000 potassium permanganate solution are used for abscesses surgical evacuation of the abscesses may be necessary Penicillin solution 200–500 units per millilitre may be sprayed on the area by means of a throat spray tyrothricin 1 in 40 does not sensitize the skin and can be used similarly or in an emulsion cream Penicillin cream and ointments in some cases *may produce* contact dermatitis or sudden pustulation The application of Lotio Cupro Zincica (*N F*) or of perchloride of mercury and carbolic lotion by day with Quinolor Compound Ointment at night is recommended

Sulphathiazole or sulphadiazine 1 tablet thrice daily for 7–10 day is *given in* exacerbations together with adequate fluids and alkalis or penicillin parenterally Calcium sulphide ⅓ grain or yeast may be given 3 times a day Vaccine therapy can be disappointing but *may* help in some cases an autogenous vaccine is best or a polyvalent vaccine of acne bacilli staphylococci and streptococci Non specific protein shock therapy —autohaemotherapy or injections of sterile milk or of Nolan—can be used

Cystic acne

Treatment is similar to that for indurated acne X ray therapy is required the results are often disappointing however and in such cases *infra red irradiation* and diathermy puncture of the cysts to evacuate their content should be employed

Acne keloid

Here x ray therapy is required and if this is unsuccessful surgical excision of the area and skin grafting are recommended

Grouped comedones

The routine *treatment* is given a sulphur and resorcin peeling paste is often required

Endocrine therapy

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Local applications —A lotion is applied at night and is rubbed in with the finger tips after washing Such preparations are lotio alba and a heavy calamine lotion

Acne necrotica

This condition responds to treatment with sulphur soap and ammoniated mercurial ointment and to control of the emotional disturbance

Acne in women

Face packs mud packs and face creams in general and especially when greasy may tend to spread infection if creams are used cleansing of the face should include the use of soap and water If soap irritates the skin of the face a sulphur oil in water emulsion cream can be used for cleansing the face, and also as a foundation cream Face powder is allowed sulphur being added to the powder when used for greasy skins (Sulphoderm) A liquid powder make up is often suitable and suspension of the active medicaments by bentonite may result in a preparation both dermatologically effective and cosmetically pleasing (*see* Appendix) Menstrual exacerbations may be controlled by means of small doses of stilboestrol and thyroid

X ray therapy

This is a most useful therapy It should be used if routine methods do not control the acne but not in patients under 18 years of age, 100 r may be given weekly at a low kilovoltage for 5–6 weeks a transitory redness possibly occurring after an application of 400 r A second course may only be given after a period of from 6 months to 1 year The maximum dose should not be more than 800–1 200 r on any one area of skin Over treatment may be followed by atrophy with or without telangiectases During treatment exposure to sunlight should be avoided the use of sulphur lotions should be suspended if the skin becomes red or irritable

To prevent recurrence local and general treatment should be continued after the completion of x ray treatment

Ultra violet light therapy

The initial dose of ultra violet light may be determined by testing a small area on the forearm with exposure sufficient to produce a mild erythema Exposure twice a week should produce a mild sunburn effect with exfoliation Exposures to the whole body may be given as well in tonic doses Periods of rest are required and the skin becomes tolerant after frequent exposures Preliminary degreasing of the skin by means of spirit is employed in the case of very greasy skins Ultra violet light therapy will reduce the amount of acne scarring and may be instituted 1 month after x ray treatment but not sooner and must not be given at the same time as x ray therapy In the application of ultra violet light caution is indicated in treating pustular acne and in the case of blond or red haired persons The treatment is said by some to encourage the growth of hair and on this score it may be contra indicated in some women

ROSACEA

Definition

Rosacea (syn acne rosacea) is a chronic affection of the flush areas of the face usually occurring with seborrhoea A fully developed case shows flushing, telangiectases acneform papules and pustules

Symptoms

In early cases there occurs a transient erythema or flushing of the face with diffuse or localized patches of redness on cheeks or forehead This may be induced by exposure to heat or cold or may take place during meals Later permanent dilatation of vessels with telangiectases is present and acneform papules and papulo-pustules appear over the flush areas In a developed case the colour of the skin may be red or purplish The nose sides of the cheeks and the forehead above the bridge of the nose and the eyebrows are particularly affected A greasy seborrhoea may be present with prominent dilated sebaceous follicles which may be plugged with sebum Papulo pustules may occur on the chin area in some cases particularly when the condition is associated with uterine disturbances A cystic form may show indolent often fluctuant bluish nodules and discharging sinuses Rhinophyma with gross sebaceous over activity and bulbous increase in the size of the nose is an uncommon late effect occurring chiefly in heavy drinkers with chronic congestion of the face Here sudden attacks of lymphangitis with erysipelas like swellings may complicate the condition Eye complications are simple injection of the conjunctivae in the early stages conjunctivitis and keratitis with actual corneal ulceration and subsequent impairment of vision (Plate II)

Aetiology

Rosacea is a disease of middle life and is very common at the menopause Women are more frequently affected than men and pubertal cases are seen An association with oily seborrhoea and dandruff is usual Over-eating indigestion and gastro intestinal disorders are often found underlining the connexion between chronic inflammatory gastric changes liver disease and the development of telangiectases on the face one example of this connexion is to be seen in heavy eaters and drinkers Pelvic congestion uterine disturbances and exacerbations occurring in pregnancy and menstruation may be associated conditions Exposure to the sun and wind may be causative in outdoor workers as for example in engine drivers sailors or farmers heat is also a causal factor in furnace and coke oven workers Soap and washing aggravate the condition of the skin in many cases of rosacea Sepsis occurring in teeth tonsils or sinuses is responsible for secondary infection with increase in pustulation Vasomotor instability is a marked feature and a tendency to easy blushing in embarrassment may date from childhood The waxing and waning of the erythema in the flush areas is characteristic and is seen immediately the patient enters the consulting room It is further seen during history taking or if the patient becomes in the slightest degree embarrassed Coldness of the extremities with chilblain type circulation demonstrates the lack of vasomotor tone in other circulatory areas

Emotional factors are of the greatest possible importance These include long continued nervous stress worry menopausal instability and maladjustment or frustration in domestic social or business life Klaber and Wittkower (1939) explain rosacea as a permanent blush resulting from an abnormal degree of social anxiety

The rosacea patient is often a very busy person full of good works with arduous household duties too many social and family commitments (often as a



Rosacea with ocular signs

PLATE II

tendency to tiredness in the late afternoon in difficulty in getting started in the morning and in the patient s ability to wake up in the evening at a time when she should be going off to bed Older people may find themselves falling asleep as soon as they sit for a few minutes Similar symptoms are often present in the occult group

A tension state is developed in all groups but it is most evident in the patients in groups 3 and 4 In these it is seen in an attitude of tension—a bird like alert ness—(Stokes 1942) the patient sits on the edge of the consulting room chair speaks rapidly tends to repeat the doctor s own words and is quick in disrobing the general impression being that of a race against time Often a sudden dis solution into uncontrollable weeping will cause this edifice of tension suddenly to collapse

The exhaustion state with its symptomatology is not by any means peculiar to rosacea but it is an important factor in the aetiology and in the successful treat ment of such cases It may be more easily recognized in patients with rosacea than in some other types of patient because of an inborn or acquired weakness of tone in the blood vessels which renders blushing easy and permanent dilatation of the capillaries more likely

The ill repute of strong tea in the aetiology of rosacea may well be un deserved Strong tea may be a cerebral stimulant to overcome chronic fatigue rather than a gastric irri tant!



Fig 91 —Syphilitic eruption on face simulating pustular rosacea Note the asymmetry in distribution the nodulo-cutaneous lesion at the side of the right nostril and indurated ulcer at the angle of the mouth on the left This patient also suffered from alopecia at the back of the head

Diagnosis

The condition should be differentiated from sebor rhoeic dermatitis in which vasomotor symptoms are absent and from lupus erythematosus The latter shows scaling with scar formation typically occur ring on a butterfly area which may involve the ears and present as scarred bald patches on the scalp A nodular tertiary syphilide is more asymm trical (Fig 91) and commonly produces scarring The rosacea like tuberculide of Lewandowsky may cc ur with tuberculous glands of the neck and Bazin s disease

result of not liking to say no) Professional business life is commonly hectic without proper holidays and marked by a tendency to do all the work herself rather than pass it on to subordinates

From a practical standpoint it is easiest to regard the continued expenditure of energy—mental from a tendency to worry or from brain work and physical from muscular exertion—as the factor responsible for producing a chronic exhaustion state

A tendency to go late to bed coupled with inability to get off to sleep or a habit of waking up after a few hours sleep further increases the fatigue state An over developed conscience, sometimes coupled with a mental restlessness and an urge to overwork adds impetus to the process Housewives not uncommonly attempt the impossible task of being mentally and physically active for months on end for some 20 hours out of the 24 if the total amount of time in actual sleep be computed The state of nervous tension thus generated is finally accompanied with the very familiar symptoms of sleeplessness depression inability to concentrate and emotional instability with spells of weeping

Over simplification of the symptoms of disease may be unscientific and inaccurate, but is a useful guide in practice, to treatment Thus fatigue states in rosacea may be conveniently grouped into four although overlapping will occur

(1) Exaggerated fatigue occurs in the ever complaining neurotic or the chronically worried and unsettled person

(2) Over fatigue—the over tired state that accumulates from long periods of physical or mental work in trying circumstances—is exemplified in the harassed housewife It is often associated with the easy fatigability and the mental and vasomotor instability common at the menopause

(3) Occult or hidden fatigue is present in the shy self conscious individuals with inferiority feelings who mask their tiredness They force themselves against their better judgement into social obligations and duties because they *feel that they* ought to do so or that they owe it to their partners or families or to society in general They hesitate to confess how tired and ill they really feel because they know the lack of sympathy with which their complaints will be met in view of their healthy and red faces This is the largest group of all and represents the social anxiety factor described by Klaber and Wittkower (1939)

(4) Suppressed fatigue occurs in the driving busy individuals always on the go with a 100 horse power engine in a 40 horse power chassis (Becker and Obermayer 1940) who are over ambitious for self or full of good works for others They are too busy to experience normal fatigue and in consequence the fatigue state and the rosacea may show only when the aging chassis cannot keep up with the demands of the engine in later life These persons may be meticulous over tidy and obsessional As a rule they are incapable of relaxation They cannot allow themselves to feel tired until a momentary loosening of the mental effort that keeps them going brings about a sudden overpowering sense of exhaustion A short rest rapidly recharges the batteries launching the patient once again into an orgy of work or of social activity Minor degrees of suppressed fatigue are seen in a sudden

rest time being an excellent opportunity for this Some persons with the 100 horse power drive may dis-harge their surplus energy better in the cultivation of open air hobbies as for example in walking fishing bird watching or gardening Such hobbies however must not become work that must be done

Phenobarbitone $\frac{1}{8}$-$\frac{1}{4}$ grain thrice daily will help the restless unable to sit and relax type of person who is over worked socially and professionally while the chronically tired but won t confess it or the over worried person does better on a bromide and belladonna mixture Bromides however should not be given in the case ol pustular rosacea or in acne or in elderly people with defective renal elimination

Local treatment

The rosaceal skin is often sensitive and will be irritated by strong applications red haired or very fair persons may be intolerant of sulphur in lotions Lotio Calaminae (*B P C*) is used for very erythematous skins and lotio alba or calamine and sulphur lotion for greasy skins In dry irritable skins Unguentum Aquosum (*B P*) calamine liniment or Crooke s Collosal Calamine and if seborrhoea is marked 2 per cent sulphur and salicylic ointment may be prescribed In some cases extremely good results are achieved by means of this latter ointment together with weekly doses of x rays 60–80 r for 4–6 exposures (MacCormac s technique) Pustular lesions are treated as in acne cystic swellings may require aspiration Artificial sunlight therapy is contra indicated except in patients with acne and very greasy skins

General treatment

A seborrhoeic scalp requires treatment In pustular conditions the patient s teeth and sinuses should be examined radiologically and appropriate treatment given Sulphonamides penicillin and vaccines are used as in pustular acne

Ichthyol 3 grains in capsule form or liquid extract of ergot 10–15 minims given three times a day may lessen flushing

Dilated capillaries may be closed by means of electrolysis or by ironing the length of the vessel with the dull point of a cautery When rhinophyma is present plastic repair of the nose should be undertaken the hypertrophied masses being shaved off by means of a sharp scalpel The occurrence of lymphangitis as a com plication of rhinophyma is an indication for the administration of penicillin or sulphonamides and for local treatment designed to heal any persistent fissures in the nostrils which provide the source of infection

Eye complications necessitate the administration of riboflavine 3–6 milligrams 3 times a day to supplement the vitamin B complex and Albucid eye drops are required together with special treatment of the corneal ulceration

HYPERIDROSIS

Hyperidrosis (syn excessive sweating) may be either a generalized or a local condition

The general causes include disturbances of heat regulation hyperthyroidism tuberculosis anaemia rheumatic polyarthritis and obesity Excessive smoking and indulgence in alcohol may be operative factors Organic and functional

Treatment

Control of factors causing flushing of face

Exogenic physical factors—It is necessary to reduce to a minimum the exposure of the face to wind sunlight frost and extreme cold over hot baths the direct heat of a fire or of a cooking stove should be avoided Outdoor occupations or jobs involving exposure to great heat are unsuitable Soap irritates many rosaceal faces and in these cases the skin may be cleansed with a skin milk or ordinary milk or a wet flannel A sulphur soap may be used if acne vulgaris is present as well Men should shave with an electric razor or a dry shaver or use a brushless shaving cream Women are allowed cosmetics powders lipstick and non greasy face creams but for oily skins a non greasy face cream supplemented by a superfatted white soap is advisable for cleansing purposes

Reflex gastro intestinal factors—Meals should be eaten slowly Hot foods and drinks should be allowed to cool Highly seasoned or spiced foods sauces pickles and cooked cheese must be excluded from the diet In regard to alcohol the drinking of spirits is absolutely contra indicated Tea should be weak the coffee intake being limited and in the evenings forbidden altogether, other dietary restrictions are similar to those given in the treatment of acne Well diluted hydrochloric acid 10–30 minims in water is taken with meals in some cases however an alkaline gentian mixture with belladonna is preferred

Endocrine therapy

Oestrogens are used in menopausal states and thyroid in hypothyroidism or in rhinophyma Corpus luteum preparations may be tried in dysmenorrhoeic cases

The exhaustion state

The practitioner can achieve much by a frank discussion of this background with correction of minor domestic or business frustration skilled psychiatric treatment is rarely necessary

The over tired person and often the rosacea also will soon respond to a holiday and a reduction of physical and mental work An early bedtime is essential and in women an afternoon rest is prescribed with little or no housework in the evening men require a reasonable time off for meals proper holidays and the prohibition of work taken home from the office for the evenings or the week end continued study late at night for examinations is included in this category

A preliminary holiday is often essential to begin the process of reduction of nervous tension in subjects with occult and suppressed fatigue A scaling down of general commitments with if necessary resignation from some of the patient s numerous social and welfare contracts outside the home is the rule Some patients will need to be reassured that this régime is only temporary Professional and business men should take a partner or relegate their work to subordinates

Stokes (1942) has advocated simple rules for patients under tension Individuals with over developed consciences that demand that it must be done are advised to avoid 50 per cent of such musts the reply to the conscience being what will it matter in 100 years from now? Periods of complete muscular relaxation analogous to work pauses in industry may be practised together with appropriate exercises by the tense, restless persons at set times in the day the afternoon

Prescriptions

For seborrhoea oleosa

Acid Salicyl – – 10 gr
Acid Tann – – 10 gr
Sp Meth Indust
Aqua – – aa ad 1 oz
Sig Scalp lotion

Acetone – – 120 min
Eau-de Cologne – 120 min
Aq dest – – ad 1 oz
Sig Degreasing face lotion

Hydrarg Perchlor – ½ gr
Liq Pic Carb 30 min
Resorcin – – – 10 gr
Sp Meth Indust – – 120 min
Glycer – – 40 min
Aqua – ad 1 oz
Sig Scalp lotion
N B —Chloral hydrate instead of resorcin for fair hair and castor oil q s for men

For acne vulgaris and rosacea

Pot Sulph – – 25–60 gr
Zinc Sulph – – – 20–60 gr
Acetone – – 120 min
Aq Ros – ad 1 oz
Sig Lotio alba weak and strong

Sulphur Praecip – 20–40 gr
Calamin – – 40 gr
Zinc Oxid – 30 gr
Glycer – 30 min
Liq Calc Hydrox ad 1 oz
Sig Heavy calamine sulphur lotion

Hydrarg Perchlor 1 gr
Phenol 10 min
Sp Meth Indust 120 min
Aq Camph ad 1 oz
Sig Carbolic mercury lotion

Sulphur Praecip 30–60 gr
Resorcin 30–60 gr
Zinc Oxid 120 gr
Adeps Lan Hydros 60 gr
Paraff Moll ad 1 oz
Sig Weak and strong sulphur resorcin peeling paste

Sulphur Praecip 15 gr
Calamin – 15 gr
Zinc Oxid – – – 15 gr
Lanette Wax SX – – 90 gr
Paraff Liq – – – 90 min
Aqua – – – ad 1 oz
Sig Sulphur emulsion cream

Bentonite – – – 20 gr
Sulphur Praecip – – 20 gr
Talc Pur – – – 40 gr
Calamin – – – 40 gr
Zinc Oxid – – – 40 gr
Glycer – – – 40 min
Sp Meth Indust
Aqua – – aa ad 1 oz.
Sig Liquid make up for acne (Colour tints added as suitable)

Sulphonated Lorol – 8 min
Lanette Wax SX – – 5 gr
Paraff Liq – – – 10 min
Titani dioxid – – 3 gr
Aqua – – – ad 1 oz
Adjusted to *p*H 6 with dilute sulphuric acid
Sig Cleansing skin milk for irritable skin

Pot Brom – – – 10 gr
Tinct Nuc Vom – – 4 min
Sp Ammon Aromat – 15 min
Inf Gent Co Rec ad ½ oz
Ft haust Sig ½ oz t d s

Tinct Bellad 10 min
Sod Bicarb – – 10 gr
Spir Chlorof 5 min
Inf Gent Co Rec ad ½ oz
Ft haust Sig. ½ oz t d s

For hyperidrosis

Acid Salicyl – – 10 gr
Pulv Alum – – – ½ oz.
Pulv Talc – – ad 1 oz.
Sig Dusting powder

Acid Salicyl – – 15 gr
Acid Boric – – 10 gr
Pulv Talc – – ad 1 oz.
Sig Dusting powder

Alumin Chlor – 40–90 min
Glycer – – – 15–25 min
Sp Meth Indust
Aqua – aa ad 1 oz
Sig Anti sweating lotion

disturbances of the nervous system, such as spinal injury and damage to peripheral nerves, and psychogenic stress and anxiety are also causes Localized hyperidrosis occurs chiefly on the hands and feet and at the axillae or around the genitals Unilateral sweating of the face may follow herpes zoster (frontalis) or irritation of the spinal sympathetic nerve in the neck

Bromidrosis (offensively smelling sweat) is due to the presence of unpleasantly smelling fatty acids in the sebum In chromidrosis there is secretion of coloured sweat The blue colour of the sweat in chromidrosis is due to the presence of indican which is formed in the intestinal tract and changed by fermentation and oxidation Reddish coloured sweat results from bacterial action associated with trichomycosis and is seen as glutinous sheaths on the axillary hairs

Treatment

The cause should be treated if possible Sea bathing and salt baths are beneficial In cases which are due to anxiety, small doses of phenobarbitone or 10–15 minims of tincture of belladonna may be given in a bromide mixture together with the vitamin B complex

The axillae

A temporary suppression of perspiration can be attained by bathing the area with very hot water Routine measures are the application of a dusting powder containing salicylic acid, and alum or boric acid but some patients are unable to tolerate powder in the axillae or on other hairy areas A 10–25 per cent watery solution of aluminium chloride may be used once a day a talc dusting powder being applied when the solution is dry Most proprietary deodorants contain aluminium salts These may cause irritation of the skin and may produce contact dermatitis or furunculosis

The feet

The treatment of hyperidrosis of the feet consists in the application of corrective measures when flat foot is present and in contrast baths of hot and cold water when the peripheral circulation is of the chilblain type frequent changes of socks and the use of a dusting powder should be advised The soles of the feet may be bathed in 3–5 per cent formalin daily in very severe cases if the skin will tolerate formalin the soles may be painted once a month with liquor formaldehyde Sodium hexametaphosphate in 10 per cent solution is also used In bromidrosis foot baths of 1 in 2 000 potassium permanganate are beneficial

X ray treatment administered by experts will produce very good results in hyperidrosis in the hands feet and axillae in cases which do not respond to local treatment but overdosage must be avoided

Sympathectomy may be required in cases in which hyperidrosis of the extremities defies all other methods of treatment

Troublesome sweating may occur in the inguinal submammary and intergluteal regions and also between the toes in obese or bedridden patients Secondary infection by micro organisms or fungus organisms may then take place Prophylactic treatment by sponging the parts with weak spirit solution and applying a talc and salicylic acid dusting powder should be a routine measure in these cases

CHAPTER 12

SEBORRHOEIC DERMATITIS

F RAY BETTLEY

SEBORRHOEIC dermatitis is the name given to a group of eruptions characterized by well demarcated scaly pink areas often with a yellowish tinge which tend to evolve so as to cover a certain area and then to remain stationary They are usually distributed on the head and trunk and respond relatively easily to treatment The group is essentially a morphological one and the term is therefore often applied to eruptions differing considerably in their appearance and course

In describing the evolution of seborrhoeic dermatitis it will be useful first to consider the features of the seborrhoeic state

THE SEBORRHOEIC STATE

About the time of puberty the skin undergoes considerable modifications The fine thin skin of childhood particularly about the face and head appears to the naked eye to become coarser and more greasy and the pilo sebaceous follicles more patulous This is the normal pubertal change which takes place in both sexes and affects principally two structures in the skin

(1) There is a hypertrophy of the pilo sebaceous follicle This consists of enlargement of the sebaceous gland and an increase in its activity resulting in a much greater production of sebaceous secretion than previously The skin of the whole region consequently becomes more greasy in appearance There is at the same time a change in the quality of the secretion the latter factor is an important one and probably accounts for the immunity of the adult skin to small spored ringworm infection and its susceptibility to the seborrhoeic infections notably to seborrhoeic dermatitis and its complications

The rest of the pilo sebaceous follicle shares in this hypertrophy The hair follicle is considerably enlarged and is soon filled with sebaceous secretion and debris Enlargement of the hair shaft itself may occur depending chiefly upon the site of the follicle in question

(2) There is a slight increase in the thickness of the corneous layer This affects the whole surface of the skin in the region involved including the orifice of the pilo sebaceous follicle

These alterations in the skin first appear around the naso-genial folds and the adjacent part of the cheeks and nostrils The whole of the face and scalp is soon involved the changes appear to a lesser degree on the upper part of the trunk particularly near the midline in the pre sternal and interscapular areas The pubes and the large limb flexures are less affected Seborrhoeic changes are not seen on the skin of the neck the extensor aspects of the limbs or on the forearms and lower

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its spontaneous recovery often observed during pregnancy and its occasional appearance for the first time in women after the menopause

As Barber (1929) has pointed out the effects of seborrhoea are likely to be aggravated by infrequent washing by excessive clothing and by living constantly in a warm even temperature in which the normal stimulating effect of cold air on the skin is not exerted

An effect of the seborrhoeic state is an increased susceptibility of the skin to infections with certain micro organisms In dealing with seborrhoeic dermatitis



(a) (b)

FIG 97—(a) Side face and (b) full face views showing seborrhoea oleosa with premature beard development in a young Italian woman endocrine factor suspected but not proved

and its complications four organisms are of chief importance the pityrosporon of Malassez *Staphylococcus albus* *Staph aureus* and *Streptococcus pyogenes* The aetiological role of these organisms will be considered when the causes of seborrhoeic dermatitis are discussed in more detail

SEBORRHOEIC DERMATITIS

Seborrhoeic dermatitis first appears in its mildest form as a scaling of the entire scalp A mild degree of this condition known as pityriasis capitis or dandruff is to be found in a large proportion of otherwise normal adolescents and adults The scales are thin dry and white and are easily shed There is no redness of the scalp which appears in all other respects normal a slight degree of itching may be present but is seldom troublesome

parts of the legs They begin to appear, in most cases, about the age of 9 or 10 years and are thus one of the earliest signs of approaching puberty They reach their maximum about the age of 20 years but a further increase in degree is sometimes seen in women about the time of the menopause

The degree of these changes varies considerably between one individual and another in normal males the change is usually at least moderately well marked but in some females it is very slight In people of both sexes however, the change may be a very considerable one and in its extreme form is known as the seborrhoeic state

This state is therefore an exaggeration of the normal physiological condition and many authorities (for example Darier 1928) hesitate to call it a disease There can be little doubt however that it provides the essential basis upon which the so-called seborrhoeic disorders may be superimposed

To explain the existence of the seborrhoeic state various theories have been propounded It seems that a hereditary factor often exists for a familial incidence is commonly seen Diet is usually believed to play some part, although its exact relationship to seborrhoea is difficult to prove Barber (1948) recently reviewing his own and other work on this subject maintains that excessive carbohydrate and fat intake is an important factor Its effect is possibly exerted because carbohydrate and fat promote water retention, whereas protein diminishes this Excessive water intake in itself he believes may be important in the causation of seborrhoeic dermatitis It has long been a clinical observation that a reduction of fat or carbo hydrate intake is likely to lead to improvement in seborrhoeic disorders Certain fats are notorious particularly those contained in chocolate cheese and in products of the pig It has been suggested that in seborrhoea fats are not completely broken down before absorption and may be passed relatively unchanged into the sebaceous secretion In this way it is supposed abnormality in the chemical constitution of the sebum may be produced and this may be the cause of the subsequent disorders In this event the role of carbohydrate may simply be that of a fat sparer It may be noted that alcohol may play a similar role and has been listed as one of the notable causes of relapse after treatment of acne vulgaris Darier (1928) however regards gastro intestinal auto intoxication as an important cause and considers that diet is chiefly of importance in so far as it influences this condition He therefore regards constipation as an important factor

There can be little doubt however that since pilo sebaceous development is a normal feature of puberty its excessive development is mainly the result of endo crine activity (Fig 92) Disturbances of thyroid adrenal balance have been postu lated and some authorities believe that small doses of thyroid extract are of value in the majority of cases It is likely however that the endocrines directly connected with sexual activity are the most important Barber (1948) deals with this question at length and has come to the conclusion that androgen is the most important factor Androgenic substances are of course produced in the male gonads and are also normally found in women in whom they originate from the adrenal cortex Their influence is however for the most part overcome by oestrogens and there fore it is when the androgen level is unduly high or the oestrogen level unduly low that seborrhoea appears in the female This explains the absence of seborrhoea before puberty its development in eunuchoidism after treatment with androgens

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Fig 9 —(a) Side face and (b) full face views showing seborrhoea oleosa with premature beard development in a young Italian woman endocrine factor suspected but not proved

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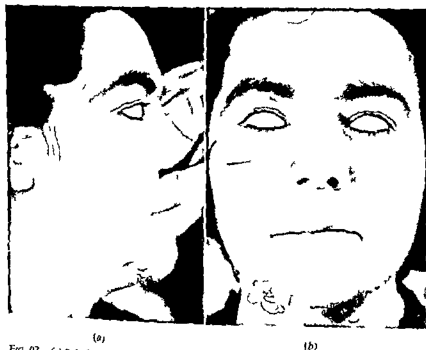
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psoriasiform lesions are produced and may make diagnosis difficult In some typical lesions of psoriasis may be present on the limbs and typical seborrhoeic dermatitis on the scalp and some parts of the trunk together with a certain number of lesions the characteristics of which seem to lie between those of these two diseases

In other cases the fine follicular lesions not more than a few millimetres across may remain isolated from each other There may thus be produced an extensive eruption covering a wide area on the trunk with lesions of this sort

Sometimes the eruption is made up entirely of oval and rounded discs yellowish pink in colour with a minimal degree of fine scaling The resemblance to pityriasis rosea may at first sight be close indeed Darier (1928) in considering such cases as these was led to wonder whether the differentiation between the two diseases is a legitimate one

Complications

Although weeping is not a usual feature of seborrhoeic dermatitis it is not very rare in the more extensive cases It is most often seen on the scalp in the flexures about the axillae and groins and in the submammary folds When it occurs the eruption assumes appearances closely resembling those of weeping eczema or of intertrigo and the distinction usually has to be made by observation of the rash on other parts of the body It seems likely that weeping is caused by an additional aetiological factor—either contact hypersensitivity or infection This point will be dealt with further

In the flexures particularly in the retro auricular region fissures are liable to occur They are most easily seen when the flexure is opened for example by pulling forward the pinna of the ear when a fissure is seen deep in the fold It often extends through the thickness of the epidermis and bleeds slightly when pulled open Its floor is usually covered with a thin whitish pus Weeping of the surrounding skin often occurs when fissures are present

Some cases progress to exfoliative dermatitis In this event the entire body surface is reddened and desquamates freely The skin may be thickened with oedema and patchy weeping may occur Irritation is often severe In this state the disorder may closely resemble exfoliative dermatitis complicating other diseases though the distinction may be made by the history of its development As it improves the original characteristics of seborrhoeic dermatitis again make themselves evident

Associated disorders

Other dermatoses of the seborrhoeic group are often seen in patients suffering from seborrhoeic dermatitis Acne vulgaris does not usually coexist with the more severe forms of seborrhoeic dermatitis but milder degrees of dandruff are almost always present and the condition of the scalp is of considerable importance in the successful treatment of acne vulgaris

Rosacea is another frequent concomitant In many cases of this disease it is necessary to give treatment for mild seborrhoeic dermatitis at the same time Indeed a mild degree of seborrhoeic dermatitis of the face and scalp may almost be said to be part of the clinical picture in rosacea

In somewhat more severe forms the eruption appears outside the scalp involving particularly the retro auricular region and the face On the face the parts principally affected are the eyebrows naso genital regions and the lateral margins of the cheeks Erythema always occurs somewhat less readily on the scalp than on other parts and when seborrhoeic dermatitis appears on the face and retro auricular regions the skin is usually somewhat pinker than normal often with a slightly yellowish tinge Scaling is profuse and irritation may be moderate in degree At the margins of the scalp the dermatitis may encroach a little on the forehead so that a pink scaly area exists a centimetre or so below the scalp margin The 'corona seborrhoeica thus produced usually accompanies somewhat more marked inflammatory changes on the scalp where a mild degree of erythema is present The lesions on the face and neck may be sharply outlined but usually do not show the well marked margins characteristic of seborrhoeic dermatitis in other situations

After the head lesions are next most commonly seen on the pre sternal and the interscapular regions, the pubes umbilicus axillae and groins are less often affected but the disorder may eventually spread widely over the trunk and limbs The palms and soles are never involved, but any other part of the skin surface may take part in the eruption

It is on the trunk that the most characteristic lesions are to be seen Here they are sharply circumscribed and usually begin as fine follicular macules Surrounding each hair follicle is a minute scale 2 or 3 millimetres across, when this is lifted off a flat pink area is found beneath Plaques of varying size are formed by the coalescence of these follicular lesions and when the plaques grow they do so by the formation of fresh follicular lesions at their margin In this way are formed round or oval areas which often run together to form polycyclic and irregularly shaped figures Their margins are sharply circumscribed although owing to the formation of fresh follicular lesions their borders may be somewhat irregular or crenated in outline

The patch of seborrhoeic dermatitis is usually pinkish in colour, but may be of a deeper red and it is usual for a yellowish tinge to be present The affected area is always covered by a thin layer of scales which are often yellow and greasy in appearance *Sometimes however the scales are white and dry* they are always easily shed and do not tend to become heaped into layers Vesicles and weeping do not occur in uncomplicated seborrhoeic dermatitis although if the scales are scraped away with a curette it is sometimes possible to uncover a small weeping surface Infiltration and oedema of the skin are slight and once scales are removed the patches can seldom be detected by palpation

The larger lesions often show clearing in the centre with the production of figurate and festooned outlines In the centre of such patches the skin returns almost to normal though yellowish staining is often still visible Clearing in the centre is a feature of chronic patches in which inflammatory changes are not marked when inflammatory changes are more severe even the largest areas show no spontaneous healing

Clinical variants

In some cases lesions on the trunk may show a deeper colour and an inclination to the production of thick large scales which tend to accumulate in this way

first time when the seborrhoeic state has developed during adolescence the more severe and widespread forms of seborrhoeic dermatitis are usually delayed until full adulthood is reached and their incidence is greatest while sexual activity is at its height About the menopause and thereafter seborrhoeic dermatitis may be particularly severe in women whereas in the elderly of both sexes it is seldom troublesome

Histopathology

The histological characteristics of seborrhoeic dermatitis seem to place this dis ease between psoriasis and eczema The epidermis shows some acanthosis enlarge ment of the papillae and increase in depth of the interpapillary processes These changes are moderate in degree and neither as marked nor as regular as are seen in psoriasis The Malpighian body shows localized areas of spongiosis which some times proceed to the formation of small vesicles Such vesicles do not rupture on the surface of the skin but are gradually absorbed as they proceed upward towards the corneous layer In some places vesicles are invaded by mononuclear cells with the formation of micro abscesses The comparable micro abscesses formed in psoriasis contain almost exclusively polymorphonuclear cells and are therefore readily distinguishable As the micro abscesses pass upward towards the surface they gradually become de iccated and may be recognized in the corneous layer as collections of deeply staining nuclear remains Parakeratosis may be continuous or intermittent and crusts consisting of the dried remains of vesicles and micro abscesses are mingled with the scales

Changes in the dermis are confined to the papillary and subpapillary layers and consist of oedema with perivascular infiltration These changes are more marked than in psoriasi and less marked than are usually found in the more acute phases of the eczematous reaction

Aetiology

In the causation of seborrhoeic dermatitis the fundamental role played by the seborrhoeic state has already been mentioned and the causes of the seborrhoeic state are therefore essential factors in the causation of the seborrhoeic dermatitis to which it gives rise Not all people who manifest the seborrhoeic state however develop seborrhoeic dermatitis and it is probable that the immediate production of the disorder depends upon infection

Infection

Infection by pityrosporon of Malasse

The pityrosporon of Malassez is a yeast like organism which assumes an ovoid shape resembling that of the old fashioned soda water bottle from which its alter native name—the bottle bacillus—is derived There is a good deal of evidence that this organism is responsible for pityriasis capitis and for the milder less inflamma tory forms of seborrhoeic dermatitis It was demonstrated in the stratum corn um by Sabouraud and believed by him to be responsible for the disease It is constantly present in pityriasis capitis and can very often be found in scalv lesions on the trunk It is at the same time often found in the scalp in other scaly disorders such as psoriasis and may be present in normal people On other parts of the body

Chronic blepharitis is very commonly associated, it usually takes the form of redness and scaling of the lid margins though *sometimes small follicular papules* and pustules are present as well Furunculosis affecting chiefly the head and upper part of the trunk, is often seen as a complication of seborrhoeic dermatitis Its incidence is presumably related to the alteration in *carbohydrate metabolism* which is often present in these subjects though the physical and chemical changes in the pilo sebaceous follicle may also be determining factors

In the beard area sycosis barbae may be produced on the seborrhoeic back ground In such cases a large proportion of the beard area is usually involved with the production of characteristic pustules and a variable amount of scaling

Chronic otitis externa is a particularly troublesome complaint and often exists upon a seborrhoeic basis accompanied by other signs of seborrhoeic dermatitis In this condition the skin of the outer third of the meatus is pink and scaly the eruption sometimes extending to the pinna and even to the adjacent parts of the cheek and neck Weeping occurs from time to time resulting in crusting and added discomfort Irritation is often very troublesome and cellulitis of the meatal wall periodically occurs with swelling and considerable pain Actual furunculosis of the meatus is less common Patients subject to otitis externa very commonly suffer from seborrhoeic dermatitis in other parts of the body but the particularly stub born course which the former runs suggests that it is in reality a somewhat different condition or that it depends upon some additional factor which is not easily eradicated by treatment

Diffuse loss of hair may affect the whole of the scalp when inflammation is severe particularly if weeping occurs The loss of hair may extend to the eyebrows and other parts if these are similarly involved Such baldness is usually partial It occurs at or soon after the height of the inflammatory phase and the hair usually grows again as the disease improves and inflammatory signs regress

A different type of baldness which is often referred to as alopecia seborrhoeica or alopecia prematura affects the vertex and parietal and frontal regions on the top of the head The sides and back of the scalp are spared This type of baldness occurs *almost exclusively in men and is no doubt a feature of the seborrhoeic* state Like the other parts of this syndrome it is often familial in incidence and probably depends upon androgens for its production It often appears in seborrhoeic sub *jects between the ages of 20 and 35 years frequently progressing* rapidly for a year or two and then remaining stationary It depends for its development upon the seborrhoeic state and it is doubtful whether seborrhoeic dermatitis with its *inflammatory changes plays any notable part*

Incidence

The incidence of seborrhoeic dermatitis closely follows that of the seborrhoeic state Pityriasis capitis together with an eruption closely resembling seborrhoeic dermatitis in the adult may occur in infants during the first few months of life Sabouraud (1936) interprets this as evidence of a temporary endocrine balance resembling the post puberty state This may be because the infant is temporarily under the influence of the maternal hormonal balance Seborrhoeic dermatitis is never seen in normal children after infancy but a very slight degree of pityriasis capitis may sometimes be found Pityriasis capitis of the adult type appears for the

the stage is well set for the development of epidermal hypersensitivity In the severer forms of seborrhoeic dermatitis when response to treatment is not readily obtained it is not unusual to find the skin unexpectedly intolerant of certain applications Intolerance of this sort may arise either to active medicaments or to their relatively inactive vehicles Unless this possibility is appreciated it may long remain over looked and failure to recover thus be unexplained since the typical picture of dermatitis venenata with the formation of vesicles leading to weeping may not be produced The only change may be an increase in the intensity of erythema and a slow spread of the eruption Weeping may however be the sequel in a proportion of cases

The relation between contact hypersensitivity and the development of sebor rhoeic dermatitis is not altogether clear cases are sometimes seen in which the occurrence of dermatitis venenata seems to be the trigger which sets off seborrhoeic dermatitis in a person who has a mild degree of the seborrhoeic state but who has not previously had seborrhoeic dermatitis When this occurs the seborrhoeic dermatitis may be of considerable extent and may continue to appear over a long period with many relapses

Diagnosis

As in its histological appearances so in its clinical features uncomplicated sebor rhoeic dermatitis seems to occupy an intermediate position between eczema and psoriasis It is from these diseases therefore that it has principally to be distinguished

Eczema

Seborrhoeic dermatitis is more sharply marginated than eczema although usually less vivid in colour Itching is less prominent than in eczema Vesicles are never seen in uncomplicated seborrhoeic dermatitis and weeping when it occurs is usually the result of secondary infection or superadded contact hypersensitivity Lichenifica tion is not often a notable feature in seborrhoeic dermatitis The typical distribution of seborrhoeic dermatitis—scalp neck face flexures—is not often seen in eczema Infiltration can often be felt in the eczematous plaque seborrhoeic dermatitis usually remains impalpable Subcutaneous oedema common in acute eczema in some regions is never marked in seborrhoeic dermatitis

Psoriasis

The patch of psoriasis is even more sharply demarcated than is that of sebor rhoeic dermatitis and is nearly always of more intense colour Scaling is dry and more profuse often with the characteristic mica like scales The patch of sebor rhoeic dermatitis can usually be seen to be made up of multiple follicular elements especially at its margin the patch of psoriasis on the other hand is uniform and is not made up of smaller elements Even when scales are removed the psoriatic patch is usually palpable The distribution of psoriasis may be of some value in differential diagnosis since the eruption though common on the scalp seldom affects the face and neck

Ringworm

Confusion may arise with tinea capitis tinea corporis and tinea cruris

however it appears only to occur in the presence of seborrhoeic dermatitis (Dowling and MacLeod, 1928)

Inoculation experiments have not been conclusive owing to the difficulty of identifying the organism and of obtaining it in pure culture Dowling and MacLeod inoculated culture material into the skin with the production of lesions which were typical of seborrhoeic dermatitis except for the fact that they usually disappeared after about 10 days It seems however, that the organism which Dowling and MacLeod used for these experiments was not the pityrosporon of Malassez but a similar organism of a different species The fact that such lesions resulted from inoculation of an organism closely similar to but not identical with the bottle bacillus does not however seriously weaken the general argument It may be indeed that there are several of these organisms each producing closely similar or indistinguishable clinical diseases in much the same way as certain fungi are known to do

Staphylococcal infection

The part played by staphylococci is principally in the production of complications and associated diseases *Staph aureus* is usually present in the associated furunculosis, blepharitis and sycosis and is presumably the responsible infecting agent From weeping surfaces staphylococci are often isolated but there is little reason to suppose that they are more than secondary invaders

Streptococcal infection

Str pyogenes may similarly be present on weeping surfaces, and pyococcal infection is believed to be important in the flexures in which intertrigo is simulated *Str pyogenes* is usually regarded as the cause of the fissures which may occur in the flexures Percival (1939) however points out that such fissures cannot be reproduced by experimental inoculation so that if their streptococcal origin is accepted it implies the existence of some very special predisposing factor

Other factors

Two other factors remain to be considered

Psychiatric disorders

Many authors have drawn attention to the influence of emotional states on seborrhoeic dermatitis and various other dermatoses Wittkower (1948) has elaborated these concepts and carried out routine psychiatric examinations of patients suffering from various dermatoses Among those suffering from seborrhoeic dermatitis he finds a certain personality type to be unusually common These patients are usually conscientious, hard working and orderly people with feelings of inadequacy who require constant encouragement They are over anxious and dislike social contacts Attacks or exacerbations of the disease often appear to follow incidents which the patient feels, threaten his status or self respect

Epidermal hypersensitivity

With the barrier of the normal corneous layer destroyed by parakeratosis and the consequent exposure of the Malpighian cells to a variety of topical applications

the stage is well set for the development of epidermal hypersensitivity In the severer forms of seborrhoeic dermatitis when response to treatment is not readily obtained it is not unusual to find the skin unexpectedly intolerant of certain applications Intolerance of this sort may arise either to active medicaments or to their relatively inactive vehicles Unless this possibility is appreciated it may long remain over looked and failure to recover thus be unexplained since the typical picture of dermatitis venenata with the formation of vesicles leading to weeping may not be produced The only change may be an increase in the intensity of erythema and a slow spread of the eruption Weeping may however be the sequel in a proportion of cases

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Ringworm

Confusion may arise with tinea capitis tinea corporis and tinea cruris

Tinea capitis—This affects circumscribed areas and even when extensive usually leaves some parts of the scalp normal. Within the affected areas hairs are easily broken off leaving numerous stumps. With few exceptions only children are affected.

Tinea corporis—Patches of tinea corporis are usually circular in outline spreading continuously at the margins and healing in the centre. In the active part erythema is usually brighter than in seborrhoeic dermatitis and scales are thinner and dryer. Vesicles may sometimes be seen.

Tinea cruris—This appears almost invariably on the inner upper aspect of the thigh. The area is bright red in colour and intensely itchy. Slow progressive spread is characteristic with a variable degree of healing in the centre. Scales are less profuse and vesicles may sometimes be seen at the advancing border.

In all cases in which clinical distinction is difficult scales should be removed for microscopical examination in order to exclude fungus infection.

Pityriasis rosea

In this disease the lesions are round or oval in shape seldom attaining a diameter of more than 5 centimetres. Scaling is less than in seborrhoeic dermatitis and often appears as the characteristic collarette. The periphery of the macule is of a clear pink colour often with a yellowish zone in the centre. The lesions are distributed only on the trunk and proximal parts of the limbs and run a characteristic course eventually disappearing spontaneously.

Rosacea

It must be remembered that mild degrees of seborrhoeic dermatitis often coexist with rosacea the latter condition is distinguished by diffuse periodic flushing of the face with the development of papules and telangiectases.

Treatment

In the treatment of seborrhoeic dermatitis the underlying seborrhoeic state *should receive consideration. Although it is by no means impossible* to influence this state its treatment often yields somewhat disappointing results in seborrhoeic dermatitis in comparison with other disorders of the seborrhoeic group.

General

Dietary treatment should aim at a reduction in the consumption of fats and carbohydrate. In this respect cheese chocolate and fat originating from the pig (bacon lard ham and so on) are principally to be avoided (Barber 1929). Excessive carbohydrate particularly bread is often believed to be harmful. Alcohol should be avoided its effect may be partly a dietary one but its vasodilator action on the head and neck is also of importance. In cases in which the skin is more acutely inflamed condiments pickles and spices should be avoided. All hot drinks are undesirable but tea and coffee may be taken in moderation if they are cool.

When desquamation affects large areas of the body over a period of many weeks a considerable quantity of protein is thus shed. In this way protein deficiency may arise *particularly involving* the sulphur containing proteins. For these reasons high protein diets are indicated in chronic extensive cases and the administration of

cystine 1 gramme daily is claimed to give good results Barber (1948) and others believe that water retention may play an important part and recommend a reduction of fluids

Endocrine therapy

Although endocrine factors are obviously of prime importance in causing the seborrhoeic state demonstrable abnormalities in endocrine balance are not often present in patients suffering from seborrhoeic dermatitis It is not surprising therefore that endocrine treatment is disappointing

After the menopause oestrogens may sometimes be given with success but in younger subjects little can be achieved with endocrine treatment

Vitamins

The fat soluble vitamins A and D are occasionally recommended more often however they are condemned and it is possible that the nutrient value of the fatty vehicle aggravates the seborrhoeic state More recently administration of vitamin B has been suggested striking results from injections of crude liver have been reported while Ferriera Marques (1947) claims success with large doses of nicotinamide

Anti allergic treatment

Many of the treatments recommended in eczema have been used in seborrhoeic dermatitis sometimes with apparent effect Among these may be included Ametox 5–10 millilitres by intravenous injection every second or third day calcium chloride or calcium gluconate 5–10 millilitres of a 5–10 per cent solution every few days and non specific protein shock induced by means of Aolan T A B vaccine or other agents The recently introduced antihistaminic drugs have been used with variable results little benefit is claimed from the use of Benadryl but Antistin up to 1 gramme a day given in divided doses seems to have an undoubted effect in some cases although none in others

Sedatives

General sedatives are often of decided value in the more acute cases particularly those in which anxiety plays a part or in which irritation is distressing For this purpose phenobarbitone ½–1 grain can seldom be bettered

Clothing

The influence of thick heavy clothing allowing little ventilation to the skin of the trunk has been mentioned Seborrhoeic subjects should avoid wearing wool next to the skin clothing should be loosely fitting and cellular cotton underwear is least likely to aggravate the seborrhoeic state

Washing the skin

The moderate use of soap and water is beneficial in most cases In the absence of erythema the scalp may be washed once a week and for this purpose a good toilet soap or a non medicated soap shampoo is suitable When erythema is present Liquid Extract of Quillaia (*B P C*) may be used without risk of irritation On the glabrous skin soap and water may usually be employed once a day with benefit in

milder and more chronic cases When however inflammatory signs are more prominent, soap should be avoided The patient s own sensations are usually a guide to the wisdom of using soap At all times the water should be tepid (about 100° F) the extremes of temperature being avoided

Baths are often of value in extensive cases and even when the inflammatory process is severe may exert a valuable sedative action The water should be accurately adjusted to a temperature of 99–100° F Medicated baths are not particularly effective but a bran bath may be of great value Baths are best given at night and care should be taken not to chill the patient when the eruption covers a large part of the body After a bath the skin should be gently dabbed dry with a soft towel all vigorous rubbing being carefully avoided

Local treatment

In general local applications may with advantage contain somewhat more active preparations than are habitually used in the treatment of eczema, the skin affected with seborrhoeic dermatitis is however more susceptible to irritation than the normal skin and care should be taken that applications are not too strong The possibility of the development of allergic contact hypersensitivity should be borne in mind

The scalp

In cases of pityriasis capitis without erythema of the scalp satisfactory results may usually be obtained by the application of a spirit lotion once or twice daily A little castor oil should be added in order to prevent excessive drying Salicylic acid has the property of reducing scaling and a mild stimulant such as resorcin or chloral hydrate is of value

Chloral Hydr – – – – –	2 parts
Acid Salicyl – – – – –	3 parts
Ol Ricin – – – – – –	4 parts
Sp Meth Indust – – – –	ad 100 parts

In cases in which inflammation is somewhat more active oily preparations are more suitable particularly those containing sulphur Gray (1946) recommends the following preparation

Sulphur Praecip – – – – –	3 parts
Acid Salicyl – – – – –	3 parts
Ol Cocois – – – – – –	75 parts
Vaseline – – – – –	ad 100 parts

This preparation has the disadvantage of being somewhat messy to use and satisfactory results can often be obtained with a cream consisting of

Sulphur Praecip – – – – –	½ part
Acid Salicyl – – – – –	½ part
Lanette Wax SX – – – – –	3 parts
Paraff Liq – – – – – –	12½ parts
Aqua – – – – –	ad 100 parts

This cream easily emulsifies with water and may be washed out from the scalp without the use of soap

In the most severe cases when weeping of the scalp is taking place it is usually necessary to cut the hair short before dressings can be properly applied Crusts may

be removed by bathing with warm water every 4 hours followed by the application of Linimentum Calcis (B P C) The addition of 2 per cent of ichthammol to the liniment is sometimes of value Although secondary infection is very liable to occur in such cases it is usually easily brought under control when crusts are efficiently removed and the application of antiseptics is seldom necessary

The glabrous skin

The ointment and cream mentioned above are usually satisfactory applications in the more chronic cases Sometimes however even this concentration of sulphur does not seem to be tolerated and better results are achieved with Lassar s paste or zinc cream without the addition of any more active ingredient Weeping intertriginous areas do not usually do well with this treatment but respond better to the application of weak antiseptics or penicillin When the latter is being used penicillin cream often gives excellent results It has however a slight tendency to evoke contact hypersensitivity and for this reason an aqueous solution containing 500 units per millilitre may be preferable

Once intertriginous weeping is under control the treatment recommended for the more chronic forms may be resumed

When widespread weeping areas are present with severe inflammation and eczematization the treatment appropriate to eczema of this kind is indicated (*see* pages 41 141 and 203) The fissures which occasionally form in the flexures particularly behind the ears respond well to the application of Lassar s paste 2 or 3 times daily

Irradiation

X ray treatment is not usually very successful in seborrhoeic dermatitis In the milder cases it is not necessary in the more severe cases the response to this form of treatment is usually slight and sometimes altogether absent Ultra violet light is sometimes of value in the mildest cases and the same may be said of natural sun light in most cases however the effect of such irradiation if any is to aggravate the disease Some of these patients are considerably more susceptible to sunburn than they would normally be

Prognosis

Without treatment seborrhoeic dermatitis usually progresses to a certain stage and then remains without very much change for many months or years Spontaneous remissions and relapses may however be observed

The response to treatment varies a good deal In the milder cases the skin can often be restored to normal in the course of a few weeks More severe cases however may be stubborn and those involving large areas of skin with active inflammatory changes may resist all treatment for many months Eventually they usually respond though it is sometimes difficult to say whether the physician should claim credit for this

In the treatment of the underlying seborrhoeic state the physician strives against the effects of hereditary and other constitutional factors which are difficult to remove For this reason if treatment is abandoned the seborrhoeic state is likely to recur and seborrhoeic dermatitis to follow Relapse may often be prevented however by continuing treatment for the seborrhoeic state and it may be sufficient

to pursue this less energetically than in the treatment of an actual attack of dermatitis Reasonable avoidance of harmful articles in the diet, coupled with personal cleanliness and the use of a simple scalp lotion may be sufficient to ward off attacks in many predisposed people

ECZEMATIDES

A somewhat different class of eruption is sometimes referred to as eczematides or seborrhoeides These eruptions are made up of scaly circumscribed circular or oval patches which appear chiefly on the trunk

Clinical features

The eruption is usually profuse and is made up of round or oval macules varying in size up to about 5 centimetres in diameter The macules are usually pink, bright red or even of dusky hue the larger ones sometimes showing partial central clearing True annular forms are not usually seen The macules are always scaly, the scales are thin, white and dry and may be powdery They are often more profuse towards the margin of the macule Palpable induration of the affected area is very slight or absent

The eruption is always most profuse on the trunk, often appears on the proximal parts of the limbs and is sometimes generalized Individual macules may be few, but are usually numerous, a variable degree of itching is present

The eczematides usually appear abruptly individual lesions grow but little and in this way the eruption usually reaches its full development in the course of a few days It then tends to remain unchanged for some weeks eventually disappearing spontaneously Second attacks may occur but are not very common

Diagnosis

Seborrhoeic dermatitis.—The rapid development of the eczematide is in contrast to the slow evolution of seborrhoeic dermatitis The latter affects predominantly the scalp neck, *flexures of the trunk whereas the eczematides appear widely over* the trunk and spare the head The characters of the individual macules in the two different disorders may be closely alike but seborrhoeic dermatitis seldom produces a widespread eruption without the macules running together to form larger areas

Eczema.—The abrupt evolution of the eczematide is again a diagnostic point The lesions are scaly from the outset vesicles and weeping do not occur The eczema macule is usually palpable

Psoriasis.—The evolution of psoriasis is seldom as rapid as that of the eczematide The lesions are more sharply outlined palpable induration is usually present and scaling is far more profuse

Tinea corporis.—Seldom can ringworm of the body evolve with such rapidity but when eczematide lesions are few in number confusion may arise The eczematide lesion however does not show progressive increase in size as does ringworm In case of doubt a scale should be examined microscopically

Secondary syphilis.—In this disease evolution of the eruption is slower Scaling is not a feature of the pink macular syphilide the scaly syphilides are browner in

colour and palpably indurated Other signs of secondary syphilis should be sought but if doubt remains the Wassermann or Kahn reaction should be investigated

Pityriasis rosea —The distinction between eczematide and pityriasis rosea may present great difficulty Indeed Percival (1935) believed that pityriasis rosea is a particular type of seborrhoeide Although many would not like to go as far as this it seems probable that rashes which many would define as atypical forms of pityriasis rosea would better be labelled eczematides If the term pityriasis rosea is to be of value it is best strictly reserved for typical eruptions with the characteristic pink colour lack of induration and collarette of scales running a characteristic course

Aetiology

In spite of their name it is very doubtful whether these eruptions have anything to do with the seborrhoeic state or with seborrhoeic dermatitis Percival believes that some eruptions of this class are due to bacterial hypersensitivity and postulates focal sepsis as a possible pause In some cases the ingestion of drugs is incriminated In other patients this kind of eruption sometimes appears to be the sequel to chronic eczema occurring in another part of the body and is supposed to be the result of some sort of auto sensitization In many cases however it must be admitted that we are at a loss to postulate any feasible explanation

Treatment

The eczematides usually run a benign course clearing up spontaneously after a few weeks so that the effects of treatment are sometimes difficult to assess A search should be made for likely causes and these as far as possible removed The application of zinc cream containing 3 per cent liquor picis carbonis gently rubbed into individual lesions twice daily is usually sufficient to make the patient comfortable and often seems to accelerate the disappearance of the eruption

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CHAPTER 13

PITYRIASIS ROSEA

G B MITCHELL HEGGS

DEFINITION

THIS CONDITION is a common problem in general practice It is an acute inflamma tory disease characterized by numerous yellow, pink or old rose papules or macules of different sizes and shapes with a central scale The lesions are distributed asymmetrically, but the whole eruption is nearly always confined to the area of the trunk and limbs corresponding to that covered by a high necked short sleeved vest The condition was endowed with this name by Gibert but herpes tonsurans maculosus (Hebra and Kaposi), pityriasis maculata et circinata (Bazin and Duhring) and pityriasis rubra aigue disseminee all indicate certain features of the eruption

INCIDENCE

The eruption is more commonly seen among females than among males and particularly in young people between the ages of 5 and 30 years It is met throughout the year but is most common in autumn winter and spring It has not been proved to be infectious or contagious although two members of the same family have been simultaneously affected The onset may be precipitated by wear ing new or irritating undergarments or damp clothes or by living in damp rooms and in some cases it appears to be associated with a chill following exercise and sweating whilst wearing warm garments next to the skin

AETIOLOGY

The aetiology is unknown but there are several theories as to the cause The herald patch incubation period secondary eruption and rather stereotyped course of the disease suggest a microbic origin No organism has been seen cultured or transferred from one host to another and an extract of the scrapings injected into the skin produces no local or systemic reaction Vidal (1882) postulated a ring worm fungus producing ring shaped lesions which heal in the centre increase in size by peripheral spread and are associated with a general follicular eruption similar to a microsporide Numerous attempts to demonstrate or culture such a fungus have been unsuccessful

Again yeast like organisms living in the scalp and transferred to the body by a garment which is pulled over the head have been thought to produce the eruption directly or as a secondary manifestation and it has been suggested that the erup tion on the body might be produced in the same way by toxins from the scalp

The majority of patients do not show any systemic disorder but a few suffer from sore throat catarrh of the upper air passages enlargement of the lymphatic

glands and even fever Such cases have encouraged the theory that the condition could be due to a filter passing virus which becomes active at certain seasons and may produce an immunity as few patients are attacked twice In certain patients the lesions are more oedematous than in others and the large lesions can be fairly compared with those of erythema multiforme When such an eruption has been associated with general malaise and evidence of systemic disturbance the possibility of a toxic focus has been considered The variation in appearance of the eruption is considerable and the following types are recognized (1) macular (a) punctate (b) guttate (c) nummular and (d) circinate and (2) papular (a) maculo papular (b) miliary and (c) follicular and (3) vesicular

CLINICAL PICTURE

The first manifestation of the eruption is the isolated lesion known as the herald patch primitive plaque or medallion It is usually situated on the chest or flank near the waist line but other common sites are the junction of the trunk with the neck upper arms thigh or groins The initial lesion at first is frequently thought to be an insect bite and later a ringworm After a period of from one to two weeks whether the initial plaque is treated or not there is a widespread eruption consisting of papules and macules varying in colour from a yellowish pink or salmon to old rose In general the early stages of the eruption are more pink and the later more rust or fawn unless modified by bathing treatment or scratching

The eruption essentially occurs on the covered parts of the body but it has been recorded as sparing areas of tanned skin (Costello 1938) On the other hand the distribution is occasionally atypical and has been described as affecting the neck face and scalp in children the dorsal aspects of the hands and feet in adults and rarely the buccal mucous membrane (Guequierre and Wright 1941)

The lesions may be round oval or irregular The papules and macules at first discrete with an ill defined edge spread peripherally and often coalesce to form large irregular patches or gyrate figures the final lesions varying in size from 0 5 to 5 centimetres in diameter They may be urticarial or very rarely vesicular

The papules soon show a *fine branny scale* and the surface of the macules becomes fawn coloured loses its lustre and develops fine parallel wrinkles or waves Scaling soon occurs in the centre and spreads centrifugally almost to the periphery of the lesion The ultimate lesion looks like an envelope with its four flaps open with a coloured raised ring round it or a salmon pink patch with a scaly ring like collarette

The direction of the apparent spread of the eruption varies with the situation of the primary lesion but it is generally towards the centre of the chest The ultimate distribution is on the chest and proximal three quarters of the upper arms thighs and neck It is most marked around the axillae and groins The oval lesions are arranged with their long axes horizontal in the lumbar region of the back but tending to slope downwards outwards and forwards and inwards at the side following the course of the ribs and lines of cleavage of the skin

There may be considerable erythema or urticaria and if scratching is a prominent symptom eczematization Some cases have also a generalized lymphadenitis particularly when there have been prodromal nasopharyngeal symptoms

There may be fever, 99°–100° F and general malaise, irritation varies with the congestion of the lesions the nervous state of the patient the presence of dermatitis due to the application of blistering agents to cure ringworm and to some extent from one seasonal or regional outbreak to another

The eruption gradually fades after 10 days and in the mildest cases may be almost imperceptible after three weeks but some cases wax and wane and may take 8 weeks to clear up Occasionally the herald lesion is followed by an eruption of lichenoid lesions with similar distribution to that of the scaling form Irritation and anxiety may be intense and the condition difficult to differentiate from lichen planus In patients with psoriasis some of the lesions may be succeeded by dry thin superficial guttate or larger lesions

DIAGNOSIS

Differential diagnosis is extremely important The maculo papular eruption of secondary syphilis seborrhoeic dermatitis, guttate psoriasis lichen planus drug eruptions and tinea circinata must all be excluded

In the assessment of doubtful cases general malaise pallor the presence of lesions in the mouth or history of headache suggest syphilis and enlargement of the lymphatic glands especially the epitrochlear and inguinal glands or the presence or history of a genital sore will support this A scurfy head lesions confined to the sternal interscapular or mid dorsal axillary or umbilical regions associated with a rather greasy skin suggest a seborrhoeic factor Yellow rather adherent scales with outlying lesions beyond the vest limit appearing at the distal end of the extremities and perhaps even on the face suggest true seborrhoeic dermatitis An important point in the diagnosis of pityriasis rosea is that the lesions tend to be surrounded by a collarette of scales the free edge of which points towards the centre of the lesion In seborrhoeic dermatitis on the other hand the scale is attached centrally with the free edge pointing away from the centre of the lesion An isolated lesion with considerable inflammatory reaction at the edge well marked vesicles with a striking difference between the centre of the lesion and the periphery suggests tinea The inflammatory reaction and vesicle formation may be misleadingly slight in cases in which the infection is with *Microsporon canis* It is always wise to take a scraping from the edge of several lesions in doubtful cases

Eruptions which are not truly pink are not associated with adenitis a herald patch or a scurfy head and are distributed on the trunk and limbs perhaps more markedly on the lower limbs buttocks and pubic region with a history of waxing and waning with the ingestion of drugs are strongly suggestive of drug eruptions Distribution on the extensor aspects silver or mica like scaling absence of a herald patch absence of irritation and malaise but a history of recent pharyngitis or tonsillitis is strongly suggestive of psoriasis More careful examination of the scalp nails lips and knees and a review of the family history may settle this point Intense irritation with flat shining violaceous papules sometimes isolated sometimes in ring form sometimes in linear arrangement with a predilection for the flexural aspects and associated with a mosaic like pattern of white lesions on the buccal mucous membrane or lips or white patches on the dorsal aspect of the tongue suggests lichen planus The patient with this disorder is usually anxious

and complains of irritation The person with syphilis looks ill and anxious but has no irritation The patient with psoriasis or pityriasis rosea usually does not look or feel ill

Careful consideration and examination of the whole body will repay the clinician considering the differential diagnoses as the long axes of the oval lesions in pityriasis rosea so frequently follow the line of cleavage of the skin and tend to be horizontal in the mid dorsal region and along the line of the middle and lower rib In all cases in which there is enlargement of the lymphatic glands blood examination is strongly recommended to exclude syphilis A scraping is always justifiable as occasionally I have seen widespread eruptions in some ways similar to pityriasis rosea secondary to normal ringworm and ringworm should always be considered when there is the possibility of close contact with domestic animals or pets pigs cattle or mangy and long haired dogs and cats

TREATMENT

There have been no great advances in the treatment of this disease New procedures include the injection of convalescent patients serum (Niles and Klumpp 1940) the injection of 1 500 trichophytin extract intramuscularly three times a week for two weeks (Vass 1945) intramuscular injection of killed typhoid bacilli 20–150 millions (Ebert and Otsuka 1943) intravenous injection of a mixed streptococcal vaccine on alternate days three times (Findanza Carrillo and Schujman 1936) It is possible that an attack may be aborted by treatment of the herald patch twice daily with a weak solution of iodine for three days and then covering it with 2 per cent salicylic acid ointment Patients seen at the onset of the eruption that is to say 7–10 days after the herald patch has appeared will be wise to take as little exercise as possible so as to avoid overactivity of the skin to keep to a lacto vegetarian diet and to avoid hot drinks Hot baths usually increase the irritation and may encourage a more widespread eruption As soon as the eruption is established and no more new lesions are appearing the patient can adopt an ordinary routine of exercise diet and bathing The patient will be more comfortable if cotton or silk clothing is worn by day and night rather than wool or flannel garments

The amount of irritation suffered by patients is most variable In cases in which the irritation malaise or anxiety are marked the following powders and lotions are useful

Powder A

Acid Salicyl	10 gr
Menthol	2 gr
Zinc Oxid	180 gr
Amylum	180 gr
Zinc Stear	180 gr

Applied after a bath night and morning

Powder B

Compound Salicylic Acid Powder (*B P C*)

Lotion A

Phenol 1 per cent in calamine lotion

Lotion B

Menthol 2 per cent in oily calamine lotion

The relief can be further increased by the use of phenobarbitone $\frac{1}{4}$ grain three times a day, or by the following

Phenacet	–	–	–	–	– *10* gr
Carbrom	–	–	–	–	– 5 gr
Acid Acetylsalicyl	–	–	–		– 5 gr

Many patients suffer so little irritation and anxiety when once reassured of the nature of the condition that there is no need for them to use any local application or to take drugs by mouth In those cases in which the appearance is causing anxiety, it can be camouflaged by bathing in potassium permanganate solution *1 5 000 strength The stain on the bath may be removed by the prompt application* of a 10 per cent solution of sodium thiosulphate A masking erythema followed by desquamation over the reddened area and rash can be produced by ultra violet light therapy

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CHAPTER 14

PSORIASIS

H R VICKERS

INCIDENCE

ONE of the commonest disorders of the skin psoriasis occurs in about 5 per cent of the patients seen in the dermatological out patient departments in Great Britain In spite of the amount of research which has been carried out the cause of the condition is still unknown

Psoriasis is met with equally in both sexes it can appear for the first time at any age although the first attack most commonly affects young adults

CLINICAL PICTURE

The primary lesion consists of a small flat topped papule or larger plaque which is dull red in colour and which is usually surmounted by fine scales the silvery colour of which is accentuated by gentle scraping The scales are abundant and



FIG 93 —A typical patch of psoriasis

slightly adherent (Fig 93) The lesions are not indurated not vesicular and never give rise to scarring Occasionally they itch but this is unusual On scraping the lesion the scales can be removed and a red shining surface appears through which minute capillary points are seen and on continuing the scraping these capillary points give rise to pin point haemorrhages

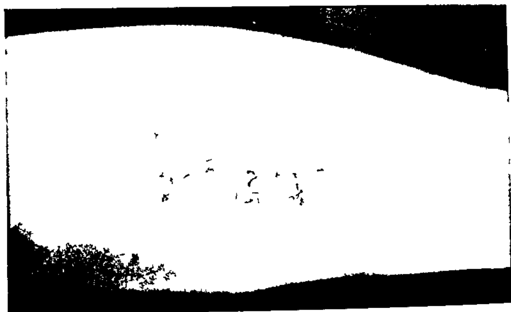


Fig 94—Psoriasis occurring on a tattoo mark (Kœbner phenomenon)

Fig 95—Guttate psoriasis occurring three weeks after acute tonsillitis

By coalescence annular spread with central healing and heaping up of scales various types of psoriasis are formed and the description depends on the appearance of the lesions guttate circinate annular and rupioid forms are described but these are all essentially the same disease Many psoriatic subjects show the Kœbner phenomenon that is the lesions appear on the site of superficial trauma (Fig 94) and the occurrence of this phenomenon helps in the understanding of the various forms of psoriasis It is also one explanation of the chronicity of the condition and the difficulty of promising permanent cure of any patient There is probably some slight deviation from normal in the psoriatic skin perhaps some biochemical abnormality which causes the skin to react to any trauma by the production of the psoriatic papule Thus not uncommonly acute psoriasis with a generalized guttate eruption of small papules follows within two weeks of an attack of tonsillitis (Fig 95) and one can postulate an invasion of the skin by some toxin or allergen similar to the invasion of the kidneys following tonsillitis with consequent production of small scattered lesions Similarly when psoriasis occurs in a patient with the seborrhoeic tendency the lesions are mainly in the areas affected by seborrhoeic dermatitis the axillae sternum and groins the so-called psoriasis inversa Thus so long as the patient has the changes in his skin which result in the production of psoriasis attacks are always liable to occur because some trauma of the skin—using the word trauma in its widest sense—is liable to produce an outbreak and it is because there are so many different ways of producing skin trauma that so many different causes of psoriasis are listed

One such cause deserving special mention is psychogenic upset Many psoriatics notice that the condition of the psoriasis is affected by their mental state Business

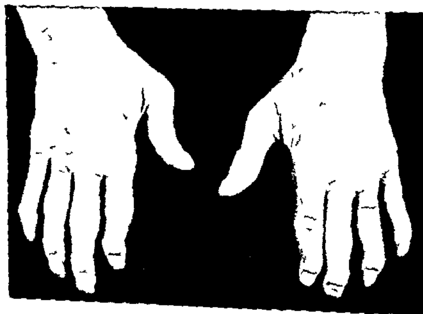


Fig 96—*Psoriasis arthropathica* showing deformity of the small joints of the fingers



FIG 94—Psoriasis occurring on a tattoo mark (Kœbner phenomenon)

FIG 95—Guttate psoriasis occurring three weeks after acute tonsillitis



FIG 98—Psoriasis occurring on the elbow

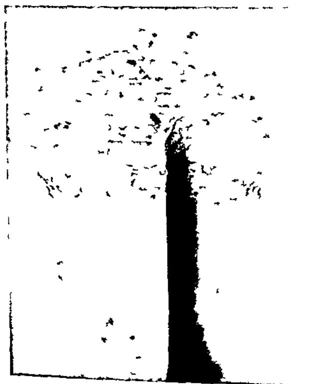


FIG 99—Psoriasis of the sacral region This is often very resistant to treatment

men often find after a particularly trying period at work that their condition becomes worse and many cases give a history of subacute anxiety, the degree of which is closely reflected in the skin

Arthropathic psoriasis is most commonly seen in young adults These patients show the characteristic lesions of psoriasis associated with rheumatoid arthritis (*Fig 96*) Either of these conditions may be the first to appear but in treating these cases the degree of activity of the joints is usually closely reflected by the skin changes, most probably both are due to a common cause

SITES OF INFECTION

The parts of the body commonly affected are the knees elbows and scalp (Figs 97 and 98) although, as explained previously, no part of the skin is immune (Fig 99)



FIG 97 —Psoriasis of the knees

Parts of the body normally exposed to sunlight usually escape although as Sequeira Ingram and Brain (1947) point out psoriasis of the face is often seen in the industrial towns of the north of England, the smoke cloud probably cutting off the protective actinic light in these regions Psoriasis is very uncommon in dark skinned races

In the scalp the lesions tend to be more heaped up than on the rest of the body probably because the scales are not shed so readily and there is no loss of hair in these cases, in fact patients with psoriasis of the scalp usually have a heavy growth of hair The well defined heaped up lesions in the scalp can be felt more easily than seen

The nails are commonly involved and when involved in most cases all the nails are affected to a greater or lesser extent The characteristic appearance is well named thimble pitting , in which a number of minute pits occur on the surface of



FIG 98—Psoriasis occurring on the elbow

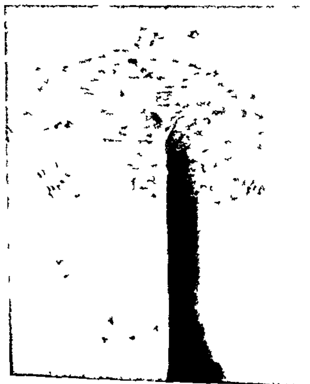


FIG 99—Psoriasis of the sacral region This is often very resistant to treatment

the nail (Fig 100) Other manifestations are hyperkeratosis below the nail with consequent lifting of the nail from the nail bed and alteration of the colour to dirty grey The mucous membranes are rarely if ever involved

Pustular psoriasis is an uncommon variety the characteristic appearance is a well defined non scaling bright red, shining plaque in which are many small



Fig 100 —Psoriasis of the nails showing thimble pitting and lack of lustre

pustules containing sterile pus This is usually seen on the palms and soles but all areas of the body may be affected

HEREDITY

A family history of psoriasis is present in about 30 per cent of the patients Psoriatic patients are often worried about the possibility of the children becoming affected This is a difficult question to answer and the only solution is to inform them that the chances of their children having psoriasis are greater than with normal parents but that these chances are not such that steps should be taken not to have children The other common fear of patients that of the infectivity of the condition is easily dispelled since of course psoriasis is not an infectious disease

PROGNOSIS

The course of the disease is very variable and although it is comparatively easy to clear up any individual attack it is for the reasons given above impossible to prevent recurrence Occasionally the disease gradually disappears sometimes returning after a period of several years Rupert Hallam found in a small series of cases that only 10 per cent were free from psoriasis up to 10 years of having been first seen With acute guttate attacks following tonsillitis complete cure sometimes

follows tonsillectomy In patients with a marked family history of the condition the prognosis for eventual cure is not good

PATHOLOGY

The histopathological appearance is characteristic The interpapillary processes of the epidermis are longer and broader due to acanthosis with proliferation of cells in the prickle-cell layer but over the papillae this layer may be only a few cells thick There is marked intercellular oedema and small conglomerations of polymorphonuclear leucocytes which migrate from the corium giving rise to the formation of pseudo abscesses of Munro In pustular psoriasis these pseudo abscesses are very prominent Nucleated horn cells (parakeratosis) replace the normal horny layer and these cells being soft and plastic stick together forming the scales the silvery appearance being produced by air penetrating between these cells The blood vessels of the dermis are dilated

DIFFERENTIAL DIAGNOSIS

There are only a few dermatoses which might be mistaken for psoriasis

Seborrhoeic dermatitis—The differentiation is sometimes very difficult especially since as previously explained psoriasis may develop on areas of seborrhoeic dermatitis In seborrhoeic dermatitis the sternum mid scapular region and flexural surfaces are usually first involved the lesions are red and covered with greasy yellowish brown scales which are easily removed Irritation is usually severe and vesiculation with weeping of the areas occurs in the acute lesions On the scalp the involvement is much more diffuse than with psoriasis weeping and crust formation is common and often there is secondary pyogenic infection

Syphilis—Secondary syphilis may simulate guttate psoriasis and tertiary lesions especially if occurring on the scalp knees or elbows may be mistaken for psoriasis The syphilides are much more indurated scaling when present is usually only slight and the Wassermann reaction helps to differentiate Tertiary syphilis of the palm may closely resemble psoriasis but usually with syphilis only one palm is affected

Pityriasis rosea—Occasionally this is mistaken for psoriasis the short history the distribution of the rash mainly on the trunk the oval macules with the long axis in the direction of the lines of skin cl avage and the scales with the free edge pointing towards the centre of the lesion are all points in the diagnosis

Tinea circinata—This is differentiated by finding the fungus in scrapings from the lesion

Lichen simplex chronicus—Lichen simplex chronicus (neurodermatitis) may closely resemble a patch of psoriasis The lichenification and intense irritation help to establish the diagnosis

Mycosis fungoides—In the early stages the two conditions can sometimes only be differentiated by biopsy and histopathological examination

Psoriasis of the glans penis—In the absence of lesions elsewhere this is difficult to distinguish from lichen planus tertiary syphilis or erythroplasia

Tinea unguium—This may be mistaken for psoriasis of the nails It is unusual in fungus infection of the nails for all the nails to be involved thimble pitting is not seen and the fungus can be found in scrapings from the nails

Dermatophytide and bacteride eruptions—On the palms and soles dermatophytide and bacteride eruptions have to be distinguished from pustular psoriasis

COMPLICATIONS

The only complication of any significance is the development of generalized exfoliative dermatitis *which exceptionally has a fatal termination This dermatitis* is sometimes precipitated by too drastic treatment especially in the acute stages Secondary pyogenic infection of the skin is unusual in patients with psoriasis

TREATMENT

As may be expected with such a common and chronic disease many different types of treatment have been tried, but the most that one can offer the patient is to cure *any one particular attack for a varying length of time and then to help him* to control subsequent outbreaks It is necessary to have the full co operation of the patient and the difficulties of effecting a permanent cure must be fully explained to him The majority of psoriatics are very depressed by their condition and it is important to try to teach the patient to live with his psoriasis

There is great difficulty in assessing the value of any one method of treatment of psoriasis since the condition tends to wax and wane from time to time for usually, no apparent reason

General measures

Many general measures have been tried Alcohol should be avoided removal of infected teeth and tonsils sometimes results in regression of the condition and in fat patients a reducing diet with loss of up to 2 stones in weight helps to control the psoriasis The low protein diet introduced by Schaumberg and the low fat diet by Gruetz and Berger have not fulfilled the early claims made for them

Medication

Again there is no specific drug of value In the acute stages with the appearance of many new lesions only sedatives such as phenobarbitone I grain at night, should be given Arsenic should be avoided but in some cases salicylates are useful In the chronic stages arsenic *as Fowler s solution starting with 1 minim* three times daily and in the absence of intolerance (shown by smarting of the eyes and gastro intestinal disturbances) gradually increasing the dose up to 10 minims daily sometimes helps Not more than 1 ounce of the solution should be given in a course *and* the course should be repeated very infrequently The production of chronic arsenical *poisoning* which does not appear until many years afterwards must be avoided

Calciferol in large doses—up to 300 000 units daily—has been used but the results do not warrant the giving of this substance in such toxic doses

Autohaemotherapy is said to cause remission especially in acute cases

Injections of various metals have been used gold bismuth and mercuric sulphide all have their advocates

External measures

These are the only means by which any attack can be influenced In the acute stages only soothing applications should be used such as boric ointment and shake lotions of the calamine type In the chronic stages when strong ointments are used constant watch must be kept for signs of intolerance to the ointment it is in such cases that generalized exfoliative dermatitis might be precipitated

In the chronic cases the preparations used should be rubbed well into the areas avoiding as far as possible the surrounding normal skin A daily bath with removal of the scales by scrubbing with soap and water helps to ensure that the preparation used penetrates well into the epidermis

The two preparations of most use in this condition are tar and chrysarobin Tar is a very valuable application It should not be applied to hairy parts and used only for short periods round the scrotum the production of epitheliomas from the use of tar on the scrotum over a period of time has occasionally been reported

Crude coal tar or Stockholm tar may be painted on to the areas and allowed to dry but more often it is used in conjunction with ammoniated mercury and salicylic acid and prescriptions of the following type keep many cases of psoriasis under control

Hydrarg Ammon	-	10 gr
Acid Salicyl -	-	- 10 gr
Liq Pic Carbon	-	- 30 min
Paraff Moll Alb	-	ad 1 oz

A prescription used in Sheffield for many years is as follows

Hydrarg Oxid Flav	-	- 1 part
Pic Carbon -	-	- 2 parts
Adeps Lan Hydros		
Vaseline -		aa 10 parts

Drew s ointment combining the action of tar and chrysarobin is used by many dermatologists

Chrysarob			
Ol Rusc	-	-	aa 120 min
Acid Salicyl	-	-	- 60 gr
Sap Moll	-	-	- 360 min
Paraff Moll	-	-	ad 2 oz

Such ointments cannot of course be used on the scalp but if the drug is prescribed in an emulsifying base these preparations can easily be washed out of the hair and are much less objectionable

The following lotion is very effective for psoriasis of the scalp

Liq Pic Carbon	
Sp Meth Indust	
Aqua	equal parts of each

Chrysarobin is now rarely used instead the active principle dihydroxyanthranol (Dithranol B P) or one of the proprietary equivalents—Cignolin or Derobin—is

used The disadvantages are that it stains clothing it cannot be used on any part of the body from which the eyes might be contaminated, and in a proportion of patients, sensitization to the drug is established with the production of a sensitization dermatitis It is of most use on small isolated patches of psoriasis and when tolerated is very satisfactory The substance is applied night and morning until the area of psoriasis is stained the same purple colour as the surrounding skin Dithranol is used in strength 0 1–1 per cent in Vaseline or in Compound Paste of Zinc Oxide (*B P*)

Radiation therapy

Ultra violet light x rays and thorium X all have a place in the treatment of *psoriasis*

Ultra violet light

Ultra violet light is given as generalized light baths and its action is enhanced by *local application of tar, as in Goeckerman s method of treatment in which the* following ointment is applied to the areas for 24 hours

Pic Carbon	–	–	– 30 min
Zinc Oxid	–	–	– 60 gr
Paraff Moll Alb		–	ad 4 oz

This is then wiped off with olive oil the areas are exposed to ultra violet light beginning with an exposure small enough not to give a reaction After each exposure the patient has a bath and the ointment is reapplied for a further 24 hours

Ultra violet light used at home daily is also useful for helping to control the susceptibility to attacks

X ray therapy

This does help to clear up individual attacks, but it should be used very carefully and only to clear up lesions on exposed areas under special circumstances There are very real dangers of giving too many exposures over the course of time in such a chronic relapsing disease *It is useful in the treatment of psoriasis of the nails*

Thorium X

Thorium X is of great benefit in controlling psoriasis of the scalp The alcoholic solution is used 1 500 electrostatic units (E S U) per *millilitre and it is rubbed well* into the areas Remissions for as long as six months can be expected Oddly enough, in the author s experience thorium X has very little action on psoriasis of the non hairy skin

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CHAPTER 15

PYOGENIC AFFECTIONS OF THE SKIN

BRIAN RUSSELL

INTRODUCTION

A CLASSIFICATION of infective dermatoses based on the anatomical lesions associated with them is presented in the following table

(1) Infection of the epidermis and pilo sebaceous orifices (a) superficial infection impetigo (discoid circinate superficial follicular and bullous which is mainly of the new born) (b) deeper ulcerative forms involving the dermis (ecthyma pyoderma, pyoderma gangrenosum)

(2) Infection of apocrine sweat glands hidradenitis suppurativa axillaris (perinaei inguinalis glutealis)

(3) Infection around pilo sebaceous follicles carbuncle furuncle

(4) Infection in pilo sebaceous follicles folliculitis (sycosis) *blepharitis* Bockhart s impetigo

(5) Mixed superficial coccal and fungus infections of macerated moist areas intertriginous dermatitis

(6) Infected fissures

(7) Streptococcal infections of lymphatics erysipelas *recurrent cellulitis*

(8) Erysipeloid

(9) Granuloma pyogenicum (granuloma *telangiectaticum*)

(10) Ulcers

(11) Infected dermatitis

(12) Infectious eczematoid dermatitis

(13) Dermatitis vegetans

These clinical terms describe most conditions which may arise from superficial and deep infections of the skin Th y must not be regarded as diseases but rather as symptoms analogous to jaundice In a large majority of cases it is necessary to try to determine the reasons for the infections of the skin which may fall into two main groups

(1) Breaks in the continuity of an otherwise healthy skin admitting cocci and other organisms present on normal skins to the epidermis or dermis (a) traumas and abrasions and (b) all itching dermatoses leading to scratching—pediculosis scabies eczema dermatitis urticaria prurigo and psychogenic pruritus

(2) A breakdown in th self-disinfecting defence mechanism of the skin against organisms normally present on its surface (a) from keratolytic agents particularly

alkalis irritating antiseptics de greasing agents and other harmful chemical and physical agents (b) from the presence of the seborrhoeic state (c) from nutritional deficiencies either from dietetic deficiencies or from defects in absorption, (d) from disorders of metabolism excessive carbohydrate intake diabetes mellitus nephritis jaundice and other conditions

DIFFERENTIAL DIAGNOSIS

It is probable that the most common mistake in diagnosis in dermatology arises from the difficulty in differentiating between primarily infective conditions and secondarily infected dermatoses often of an eczematous nature This differential diagnosis is of the utmost importance because the treatments of the two conditions are diametrically opposed On the one hand, the misinterpretation of a sensitiza tion state or of a dermatitis medicamentosa as an infective state and its treatment with antiseptic agents will inevitably lead to gross aggravation and spread of the condition, possibly with general eczematization or light sensitization

The misinterpretation of an infective condition as a dermatitis or eczematous state is relatively much less serious because the treatment prescribed though not curative is unlikely to aggravate the condition and may in fact lead to resolution by enabling the natural defence mechanisms of the skin to eliminate the invading organisms in the normal way

This difficulty in differential diagnosis is increased by reason of the close mimicry of infective dermatoses by conditions not primarily infected For example a sulphonamide dermatitis may present with pustular lesions on forearms and hands The application of acriflavine emulsion to such an eruption is likely to be followed by generalized eczematization with light sensitization

From these remarks it is apparent that a diagnostic approach based upon the appearance of the lesions alone may lead to error and that accurate diagnosis can only be based on a full and detailed history with recording of events in their chronological order including the previously used topical and internal remedies and their effects on the dermatosis

IMPETIGO

Pathological anatomy

Impetigo is a superficial infection of the epidermis and funnel mouths of the pilo sebaceous orifices with pyogenic cocci It is difficult to determine in any one case whether streptococci or staphylococci are the primary invaders but it is probable that streptococci are more commonly the organisms concerned with rapid secondary invasion by staphylococci In impetigo (pemphigus) neonatorum on the other hand *Staphylococcus aureus* is nearly always the organism concerned

Clinical types

The discoid type with lesions up to 2 centimetres in diameter and thick yellow crusts is usually streptococcal Fresh lesions separated by areas of normal skin develop in a matter of hours Each lesion is primarily vesicular but these vesicles are thin walled and are rapidly broken they are therefore not often apparent to the diagnostician

The larger discoid type with lesions up to 5 centimetres in diameter and thinner varnish like crusts is usually staphylococcal This type also spreads rapidly sometimes with a tendency to central healing so forming ringed crescentic and polycyclic figures differing from tinea circinata in speed of development (Fig 101)

In the superficial follicular type which tends to arise in the seborrhoeic subject the golden crusts are in follicular pattern but are obviously more superficial than



FIG 101 —Impetigo contagiosa of circinate type *probably* staphylococcal and hence likely to lead to sycosis (staphylococcal folliculitis) if not promptly and completely eliminated

the pustules found in folliculitis *If treatment is neglected* however this type may become a folliculitis

Bullous impetigo (*pemphigus neonatorum*) is a very contagious condition arising in the new born (rarely in adults) *either from* infection around the umbilical stump or from an eruption in the napkin area

Ulcerative impetigo (ecthyma) *mainly arises in* debilitated individuals and is often associated with lack of cleanliness and *sometimes* with a measure of mental deficiency These impetiginous lesions on the legs involve the dermis *giving* the appearance of *purulent* crusted and moist areas leaving scars

Pyoderma is a form of widespread impetigo in which frank pustules *develop* related to either virulent streptococci or states of nutritional deficiency or *both* in association

Pyodermia (ecthyma) gangrenosum is a rare condition arising most frequently with ulcerative colitis in which a widespread pyodermia develops becoming ecthymatous and phagedenic (ulcers which undergo colliquative necrosis with rapid spreading) The condition is probably related to extreme nutritional deficiency protein drainage and severe dehydration

Diagnosis

Impetigo is much more common in children than in adults, probably for the following reasons (i) the skin is thinner and softer and relatively lacking in the protective fatty acids of the sebaceous secretion (ii) there is usually more dirt under the nails and on the skin (iii) habits of picking of the skin or of the nose which is the chief carrier site of staphylococci lead to inoculation of fresh areas (iv) a greater tendency to abrasions for example from rough and tumble in games (v) greater frequency of purulent infections elsewhere such as chronic suppurative otitis media adenoidal vegetations associated with chronic nasal discharge and purulent conjunctivitis or blepharitis

Impetigo involving certain areas has special implications On the scalp it suggests a possible infestation with pediculi, or lack of cleanliness A ringworm infection of the scalp may become secondarily infected On the face the likely causes include pediculosis of the scalp dirt otorrhoea nose picking and whitlows A low grade paronychia or subcuticular whitlow can be a source of repeated inoculation of the face with cocci Post auricular and naso labial fissures may also act as carrier sites for cocci Herpes bites and all itching dermatoses may become impetiginized

On the body also pediculosis must be excluded but much more commonly the cause is a scabietic infestation and any other itching dermatosis may be the cause particularly lichen urticatus and eczematous states

Impetigo in the ano genital region may be due to threadworms or one of the numerous other causes of pruritus in that area

In the new born baby the skin is so thin and around the napkin area so subject to maceration from urine that infection with staphylococci can arise with the greatest of ease Hence epidemics of impetigo neonatorum are likely to occur in maternity units following the outbreak of a single case The problem here is a wider one of epidemiology and calls for examination for and exclusion of staphylococcal carriers both from the nose and mouth and also from low grade infective conditions of the finger tips particularly paronychia fissures and subcuticular whitlows *Dust borne transmission also has to be considered* and damp dusting or oil dusting should be carried out in the presence of such an outbreak

In the other conditions ecthyma and pyodermia nutritional defects must always be taken into consideration and in ecthyma it is necessary to make *allowance for* lowered states of intelligence and general lack of cleanliness

Treatment

The aims in treatment are to raise the resistance of the skin against the organisms, to render conditions unsuitable for their growth and to deal with carrier sites

so as to prevent reinfection States of nutritional deficiency are not often apparent in impetigo

Having excluded all the possible causes of impetigo treatment aims mainly at making the skin an unsuitable medium for the growth of cocci Under this heading may be included desiccation antibiotic measures and antiseptics

Many cases of impetigo may be treated successfully with simple desiccating applications such as calamine lotion dusting powders zinc paste (to which may be added 1 per cent of ammoniated mercury with advantage) combined with prevention of access of the fingers to the lesions if necessary by covering the latter with small pieces of adhesive zinc oxide plaster It is always essential to cut the nails short in impetigo and to keep them clean

If the lesions are multiple and spreading antibiotic measures are best employed and the patient or the parent should be instructed to bathe off any loose crusts with slightly hypertonic saline solution (a teaspoonful of salt dissolved in ½ pint of boiled water) and the raw surfaces sprayed with a solution of penicillin in saline solution containing 500 units per millilitre This lotion which may instead be painted on with a sterilized camel s hair brush (sufficient penicillin for use and no more having been previously poured into a sterile egg-cup) may be used every 2 3 hours but on every occasion loose crusts must be removed beforehand Dabbing on with cotton wool is undesirable and wasteful The lotion may prove too desiccating in which case penicillin cream may be substituted but it cannot be too strongly emphasized that the simpler the application as regards the number of its constituents the easier is it for the clinician to interpret further developments in the lesions and to adjust the treatment as required If complicated remedies are employed and the condition deteriorates it is often very difficult to decide which component has caused aggravation If penicillin in saline solution is used and the lesions get worse it can only mean that the organisms are insensitive to penicillin or that the penicillin has caused skin sensitization (eczematization) unless the penicillin is inert for some reason probably contamination The first possibility can be eliminated by culture and sensitivity tests On the other hand if penicillin cream is used and the condition gets worse there is the additional possibility that this is due to sensitivity of the skin to the Lanette Wax SX if this is used as an emulsifying agent Penicillin ointment is best avoided as cocci often multiply in the moist conditions beneath it

If there is reason to believe that the individual is sensitive to penicillin or if penicillin is unavailable quick relief can be obtained by saline bathing and the application of lotio cupro-zincica zinc paste or calamine lotion to which may be added mercuric chloride 0 1 per cent Quinolor ointment is also effective

HIDRADENITIS SUPPURATIVA

This condition usually occurs in the axillae but can also develop in the perineum and inguinal and gluteal regions The infection is in the apocrine glands so numerous in these regions It is far more common in women than in men Psychological and endocrine factors may play a part in many cases but it is always important to exclude the possibilities of maceration from sweat retention and resultant secondary infection This maceration may arise from the use of rubber dress protectors

In other cases the duct openings may be damaged by the use of deodorant applications or depilatories

The lesions present as tender nodules some hard and some fluctuant, but often not breaking down on the skin surface Reinfection is common once the condition has begun and irregular and depressed scarring *may result with the formation of* sinuses and epithelial bridges

Treatment

It is essential to prohibit the use of dress protectors or any chemical cosmetic irritants Desiccation is the aim and while the application of penicillin cream for a few days may give a satisfying response it is often advisable to change after a time to an evaporating lotion, such as

Hydrarg Perchlor	– – – $\frac{1}{2}$ gr
Virid Nit	– – – – 5 gr
Sp Meth Indust	– – – 360 min
Aqua	– – – – ad 1 oz

After a few days this may be changed to a simple dusting powder such as

Pulv Acid Boric	– – – 20 parts
Zinc Oxid	– – – – 40 parts
Pulv Talc	– – – – 40 parts

If psychological or endocrine abnormalities are apparent, these must be investigated and if possible corrected Superficial x ray treatment is very useful in resistant cases

CARBUNCLES BOILS AND FURUNCULOSIS

In these conditions there is an invasion of the perifollicular region with staphylococci, so that a perifollicular abscess results In a carbuncle there are numerous perifollicular abscesses *in adjoining follicles* which, *by mutual pressure* cause necrosis of the central area resulting in the separation of a large slough In a boil there is necrosis and sloughing of the whole follicle so that a hairless scar results

Diagnosis

Furunculosis is symptomatic of lowered resistance to pyogenic organisms or damage to the skin by chafing or scratching from some cause The *distribution and* type of lesions, and the patient s personality type and general state of health must be studied In all cases of generalized furunculosis recurrent boils and solitary carbuncles, the urine must be tested to exclude glycosuria and albuminuria

In generalized cases of furunculosis it is necessary to find why breaks in the skin are arising Is the patient scratching? If so where and why? The presence of furuncles in certain regions may suggest different diagnoses Thus involvement of the buttocks anterior axillary folds and abdomen may suggest that the condition is secondary to scabies The occurrence of boils on the forearms only, or perhaps also on the neck may suggest a relationship to contact with oils at work, particularly if there is also Bockhart s impetigo on the fronts of the thighs and acneform lesions on the forearms

Boils in the ano genital region usually indicate scratching due to one of the many causes of pruritus in that area

Carbuncles may arise on the dorsa of the fingers from infection of dermatitis from industrial or other causes

Eczematous eruptions and dermatitis from any cause may become secondarily infected leading to furunculosis

Boils and carbuncles arising at the wrist (Fig 102) and around the neck are often caused by friction from rough sleeves and collars and by minor abrasions in shaving or hair-cutting



Fig 102 —Carbuncle on back of wrist showing central area of necrosis with numerous perifollicular abscesses around and a surrounding zone of shiny erythematous oedema

Generalized pruritus may be complicated by furunculosis Widespread chronic or relapsing furunculosis may be the outward sign of mental agitation leading to skin picking and scratching

Treatment

Carbuncles

These should not be incised When necrosis occurs the slough should be allowed to detach itself naturally Systemic penicillin in doses of 600 000 units for the first day and 300 000 units a day for a further 5 days may abort early lesions Glycosuria or albuminuria must be treated and even in their absence the diet should be high in protein and in vitamin B content but low in carbohydrates Alcohol is forbidden

Boils and furuncles

In these cases routine treatment with systemic penicillin is undesirable because it encourages mental laziness and inadequate investigation into the primary cause

of the furunculosis It is also at best only a passive treatment Many of the conditions can be relieved by the removal of the specific cause, for example by the treatment of scabies with benzyl benzoate by change of occupation or by psychiatric aid In the absence of any specific cause, treatment should aim at building up the general resistance of the patient and the local resistance of the skin against infection with staphylococci, the former by an adequately balanced diet with avoidance of excess of carbohydrates and supplements of vitamin B complex and proteins

The use of staphylococcal vaccine and toxoid is of very doubtful value, but manganese butyrate injections have a long standing reputation

For local treatment it is most important to prevent infection of further follicles Desiccation and hardening of the skin and removal of pus from ruptured lesions as cleanly and rapidly as possible is the best way of doing this The following is suggested

Hydrarg Perchlor - - -	½ gr
Virid Nit - - - -	5 gr
Sp Meth Indust - - -	360 min
Aqua - - - -	ad 1 oz

This should be painted around and on the boils before they break It is helpful by its effect in drying and hardening the skin around the boil, so rendering conditions unfavourable for the invasion of adjoining follicles by staphylococci expelled from the primary lesion A centrally perforated boil dressing is also useful in protecting the surrounding skin

Dry heat (as from a hot water bottle over a dry dressing) is helpful, but fomentations or kaolin poultices are undesirable because they macerate the skin and encourage the growth of pathogenic and semi pathogenic skin organisms Incision of boils is inadvisable except when there is a frank subcuticular pustule the top of which may be lifted off with a sterile needle and the contents gently expressed by placing the fingers near the opening and pulling them apart, taking care not to put any squeezing pressure on the boil Penicillin cream or lotion may be used immediately after a boil is broken to disinfect the skin around

In some resistant cases of furunculosis an injection of insulin, 10 units once or twice a day often helps

Boils on the upper lip and nose must be treated with special care It is advisable to keep the patient in bed and all pressure or squeezing must be absolutely forbidden A full course of systemic penicillin should be given If the boil points the top of the pustule may be lifted off with a sterile needle and dressings of hot hypertonic saline solution applied on loose cotton wool with avoidance of all pressure

FOLLICULITIS

Pathological anatomy

In this condition there is a deep infection of the pilo sebaceous follicles the condition differing mainly in this respect from impetigo The invading organisms are nearly always *staphylococci but in some cases particularly those of a* more chronic and indolent nature there is secondary infection with *Pseudomonas pyocyanea* and *Bacillus proteus* or other Gram negative organisms (Fig 103)

Diagnosis

The condition must be differentiated from sensitization dermatitis of the face arising from sulphonamides flavine mercury penicillin and other agents which may very closely mimic a primary folliculitis It must also be differentiated from the much rarer mycotic folliculitis The diagnosis can often only be arrived at by a careful history and chronological record of events with particular attention to the patient s description of the primary lesion and of the effects good or bad of every remedy used

The mycotic form of sycosis arises from exposure to animals usually cattle or horses suffering from trichophyton infections and produces a group of very



FIG 103—Folliculitis barbae of minor severity often found to be related to infection with staphylococci of low grade pathogenicity and Gram negative organisms

oedematous follicular papules and pustules from which hairs are very easily removed The remaining hairs may not reveal fungus within their shafts and culture may not confirm the diagnosis because secondary invasion by the cocci leads to the destruction of the trichophyton

Folliculitis is often localized particularly in cases secondary to nasal catarrh This form must not be confused with herpes simplex If the condition is more widespread or involves the whole beard area there is often a seborrhoeic background and the condition may prove to be in fact a sensitization dermatitis In the latter condition there is often perifollicular oedema in addition and crusting of the pinna and meati and even of other areas bearing coarse hairs more particularly on the forearm thighs and calves as well as in the flexures The recognition of these cases is most important as they need treatment with bland applications and systemic measures

The carrier site of the infection is the anterior nares and there is often a history of recurrence after nasal catarrh An x ray examination of the antra should be made Other sources of infection are otitis media and fissures around the ears adjoining the nose or at the angle of the mouth It is possible that in some cases the infection may travel down the tear ducts from a primary blepharitis Infection in the teeth is of relatively minor importance but any apical infection must be cleared up

Treatment

Ideally a culture should be made from a pustule and the organisms tested for sensitivity to penicillin but in practice this is only necessary in doubtful and resistant cases as a therapeutic test will give the necessary information The lesions should be sprayed with a lotion containing 500 units of penicillin per millilitre of normal saline solution If the organisms are penicillin sensitive there will be improvement, if they are insensitive there will be no change If the patient s skin is sensitized to penicillin the condition will be aggravated It is safer to use this lotion than penicillin cream because if the lesions appear to get worse after the use of the latter it is not possible to say except by separating the penicillin from the Lanette Wax SX whether the former or the latter is responsible for the aggravation Probably more persons are sensitive to Lanette Wax SX than are sensitive to penicillin

In a patient who has shown no signs of sensitivity penicillin cream or ointment may be used and these preparations are especially useful for application up the anterior nares in an attempt to destroy this chronic focus of reinfection Any antral infection must be actively treated If penicillin lotion is used and the lesions remain unaltered it is probable that the staphylococci are relatively *or completely* insensitive to this substance A culture may confirm this or it may reveal the presence of insensitive Gram negative organisms Cocci insensitive to penicillin sometimes react favourably to a tyrothricin cream containing 500 micrograms per gramme Tyrothricin has less tendency than penicillin to sensitize the skin Quinolor ointment may also be used or lotio cupro zincica If Gram negative organisms are discovered better results may be obtained with phenoxetol 5 per cent incorporated in a penicillin cream Resistant or eczematized cases may respond well to 3 per cent Vioform cream (iodochlorhydroxyquinoline) which is usually well tolerated

In all cases treatment must be maintained for 2 or 3 weeks after complete clinical relief in an attempt to destroy persisting organisms a watch being kept for eczematization

If the lesions are widespread over the whole beard area, a complete examination should be made of the patient for other evidences of the seborrhoeic state These patients are specially prone to relapse and their sycosis represents only a part of the generalized dermatosis (Fig 104) Treatment should be on the lines of seborrhoea elsewhere with penicillin lotion or cream if found useful but with the avoidance of irritating antiseptics Liniment of calamine with ichthammol 2 per cent or lotio cupro zincica are safe alternatives but ammoniated mercury is best avoided Sulphonamides should not be used except in those cases insensitive to penicillin and then only for 4 days with constant supervision Systemic treatment by oral

administration of vitamin B complex and proteolysed liver or better by crude liver injections may also prove most helpful if there is a seborrhoeic background If there is any gastro-intestinal disorder this should be corrected if possible and it is important that seborrhoeic individuals should not indulge heavily in alcohol or be dietetic faddists They must take sufficient protein and green vegetables and avoid an excess of carbohydrates and fats



Fig 104—Severe and chronic sycosis of seborrhoeic type the beard involvement being only part of a widespread or generalized seborrhoea The scalp and brows are involved and there is severe blepharitis Prognosis is poor and treatment is that of the seborrhoeic state

Emotional stresses often play a prominent part in the initiation or aggravation of seborrhoeic dermatoses and it is most important to bear this in mind when dealing with some patients Psychiatric aid may in these cases provide the only method of more permanent relief

BLEPHARITIS

Blepharitis is a folliculitis involving the eyelashes usually in debilitated individuals and seborrhoeic subjects (Fig 104)

Treatment

Treatment consists of penicillin cream or 1 per cent yellow mercuric oxide ointment locally and general nutritional measures with emphasis on vitamin B and high protein intake If any eczematization takes place after the use of these remedies they should be stopped at once A compound zinc eye lotion is helpful

BOCKHART'S IMPETIGO

This condition is due to a more superficial infection of the follicles than that occurring in sycosis barbae It arises particularly on the thighs and forearms sometimes on the calves and is usually related to contact with oils soot and other fine



FIG 105 —Folliculitis and acne of the thigh resulting from contact with working clothes saturated with mineral oil and insufficient cleanliness

particles which gain entrance to and damage the follicles cause reactive follicular hyperkeratosis and acne and allow invasion by pus forming organisms (Fig 105)

Treatment

The irritant must be avoided The skin hygiene must be of a high standard Lotio cupro zincica is a useful local application and a penicillin lotion may be used if the organisms grown from a pustule are found to be sensitive to this substance Quinolor ointment is also useful

INTERTRIGO

In this condition of maceration and infection with fungi and organisms of low grade pathogenicity which affects the submammary regions groins internatal perianal and perineal areas and the umbilicus the presence of diabetes mellitus

must always be excluded The subjects are often obese so that skin folds lie permanently in contact and evaporation of sweat is prevented resulting in infection of the macerated moist areas with cocci and moulds (Fig 106)

Maceration of the finger clefts (erosio interdigitalis blastomycetica) as in bar maids or of the toe clefts may cause a similar condition and chronic coccal and mycotic paronychia fall in the same category



Fig 106 —Intertrigo Maceration of areas of skin contact sweat retention and subsequent invasion by monilial or by pyogenic cocci

Treatment

The diabetes if present must be treated

The skin surfaces should be kept apart with light gauze or lint and the following preparation should be applied

Virid Nit – – – –	5 gr
Past Zinc – – – –	ad 1 oz.

Castellani s paint is another useful local application When the more obvious infectious state has subsided recourse may be had to a simple powd r such as the following

Pulv Acid Boric – – –	10 parts
Zinc Oleostear – – – –	30 parts
Pulv Amyli – – – –	30 parts
Pulv Talc – – – –	30 parts

This powder is applied 3 or 4 times a day if necessary with prevention of contact of the affected skin areas as far as possible by light fine mesh gauze dressings and adequate breast supports

Excessive drinking is to be avoided and dietetic measures to reduce weight may be indicated

Resistant erosio interdigitalis may respond to weekly brief freezing with ethyl chloride spray

INFECTED FISSURES

These are most likely to occur in mobile flexures, especially if the skin becomes inflamed and swollen or excessively de greased The common sites are the nares, the angles of the eyes or of the mouth on the lips themselves in folds around the ears at the paronychial folds on or adjoining the nipples around the anus and in the toe clefts

At the angles of the mouth fissures may result from an intertrigo caused by malfitting dentures or the seborrhoeic state, leading to inflammation and loss of elasticity in the skin

Behind the ears fissures may result from any skin condition which causes friction of this region, leading to thickening and inelasticity of the skin

On the fingers fissures arise from various chemical irritants, particularly kerato lytics which especially damage the thin, reflected attached layer of epidermis on the proximal portions of the nails and so cause a gap in the natural barrier to infection at these sites Cuticle removers excessive manicuring or contact with alkalis may have this effect and the resulting chemical paronychia readily becomes invaded with cocci and moulds Synthetic glues and procaine are two other common causes of severe fissuring of the finger tips

Fissures at the nipples most commonly arise during lactation due to the hard gums of the vigorous suckling if the nipples have not received proper care during pregnancy

Erysipelas may originate from any of these fissures and from paronychial fissures a pyogenic paronychia may result

Treatment

To heal the fissures an application such as the following is often of value

Argent Nit	– – – –	10 gr
Sp Aether Nitros	– – –	ad 1 oz

Friar s balsam is another effective remedy Local ultra violet ray treatment is also useful or superficial x rays in resistant cases When the fissures are healed it is essential to maintain the skin in a supple condition and to remove the primary cause if possible by building up dentures correcting nutritional deficiencies relieving neurodermatitis avoiding keratolytic agents preparing the nipples with glycerin and spirit and so on

ERYSIPELAS

This condition arises from an infection of the dermis with streptococci through breaks in the epidermis sometimes invisible to the naked eye but often apparent in the form of streptococcal fissures

Local treatment, apart from cooling lotions is of no value in the treatment of erysipelas Any obvious fissures should be treated with 2 per cent silver nitrate paint Erysipelas is well controlled by the oral administration of Sulphamezathine

Recurrent cellulitis

Certain individuals suffer from recurrent attacks of erysipelas in which there is very little constitutional disturbance due to partial immunity or relatively avirulent organisms The description recurrent cellulitis is used for such cases Often there is a persistent fissure in the skin or mucosa of the nares providing a site of chronic infection with streptococci and it is essential to eradicate this lesion if further recurrence is to be prevented With repeated attacks chronic lymphatic oedema (elephantiasis) may result

Individual attacks may be treated with Sulphamezathine and local measures include penicillin cream and 2 per cent silver nitrate paint Fissures may respond well to local ultra violet ray therapy

ERYSIPELOID OF ROSENBACH

This condition which is confined to those handling fish poultry rabbits or dead matter of plant and animal origin arises mostly in canteen workers and those who prepare food or who clean fish The site of inoculation is usually on thumb finger or the hand and the appearances are those of a slowly spreading erysipelas with

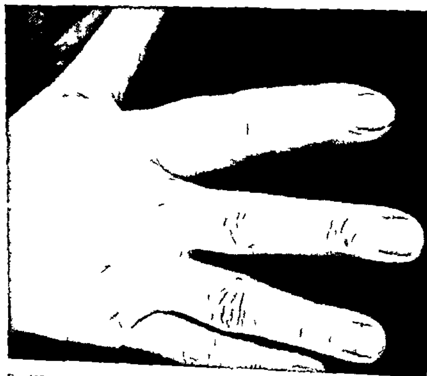


FIG 107 — Erysipeloid of Rosenbach The swollen shiny pink index finger has been infected with the organisms of swine erysipelas as a result of a scratch or prick while handling animal or vegetable matter

very little constitutional disturbance The condition is due to infection with the bacillus of swine erysipelas (Fig 107)

Treatment

Systemic treatment with penicillin results in a rapid resolution of the condition Local treatment is not necessary apart from rest and elevation of the affected part More severe cases, due to relatively virulent strains, with fever headache and malaise, call for treatment in bed

GRANULOMA PYOGENICUM

It is doubtful whether this condition is primarily due to pyogenic organisms, and a better title is "granuloma telangiectaticum Histologically the appearances are those of a haemangioma and the condition is probably a reactive, vascular proliferation usually caused by trauma It may arise from the treatment of a naevus

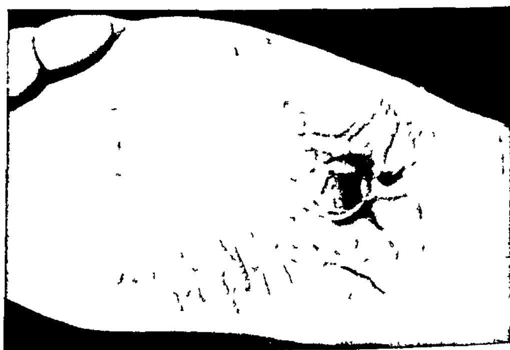


FIG 108—Granuloma pyogenicum A semi pedunculated soft reddish moist mass of exuberant granulation tissue bleeding easily

araneus with silver nitrate The tumour consisting of highly vascular rapidly growing tissue tends to exude and to become eroded and secondarily infected (Fig 108)

Treatment is by cautery destruction

ULCERS

Even the most trivial injuries and wounds of the legs are apt to become oedematous, to break down and to ulcerate leading to secondary infection

Treatment

First consideration must nearly always be given to the mechanical hypostatic factors rather than to the secondary infection The best results are obtained by supporting the limb with zinc paste bandages combined if necessary with local pressure to the ulcerated area by an accurately cut and bevelled pad of orthopaedic felt or of sponge rubber to fit the ulcerated area If they are treated from the infective view point of aetiology with antiseptics ulcers are apt to develop a surrounding area of sensitization dermatitis which may gradually spread up the leg and even become generalized

The use of antiseptics in particular mercurial antiseptics and sulphonamides is therefore strongly to be deprecated and penicillin cream should only be used when there is positive evidence of infection and then only for a few days With adequate support to reduce local oedema the skin can deal with most organisms present

There remain however a few cases in which the presence of *B proteus* or *Ps pyocyanea* may result in interference with healing Antibiotic measures may have to be employed in such cases but only after the presence of these organisms has been demonstrated by culture Pyocyanea infections may respond to phenoxetol 5 per cent in penicillin cream Tyrothricin is also a useful agent for use in chronic cases related to organisms resistant to penicillin It cannot however be too firmly stressed that a very large percentage of cases are b st treated with occlusive zinc paste dressings applied from the toes to just below the knees changed every 7-14 days combined with the treatment of any varicosities which may be present

If the patient can spare the time and does not object to recumb^ncy quicker results may be obtained by rest in bed But it may often be undesirable to rest patients with defective peripheral circulation and better to treat them in an ambulant manner with adequate support to any defective superficial veins

INFECTED DERMATITIS

Dermatitis from any cause may become secondarily infected with pyogenic organisms The treatment of infected dermatitis is however more difficult than that of a primary infection as the skin is likely to be highly susceptible to antiseptic agents which should therefore be selected with caution

Treatment

Treatment on desiccating lines to discourage the growth of organisms is the first and safest measure A simple calamine lotion or zinc paste with or without 2 per cent of salicylic acid may be sufficient but if these fail 1 per cent brilliant green in zinc paste is often most valuable and not likely to aggravate or produce sensitization A 3 per cent Vioform c eam is also useful and not liable to aggravate Penicillin cream may be used with caution but it is advisable to apply it to a small area on the first occasion and to note its effects as in the presence of a dermatitis the skin is more likely to be sensitive to the Lanette Wax SX or to the penicillin itself For this reason it is safer to spray the area with a penicillin lotion containing 500 units per millilitre of normal saline solution

INFECTIOUS ECZEMATOID DERMATITIS

This is a form of impetiginous eczema in which eczematous features predominate owing to sensitization of the skin to the organisms concerned Eczematous patches develop wherever the secondarily infected exudate makes contact with the skin resulting in the formation of numerous moist discoid or sometimes linear areas of exuding and crusted erythema There is often a primary focus of infection such as a chronic suppurative otitis media a boil, or a discharging sinus

Treatment

In view of the sensitization of the skin, it is important to avoid irritants and to try to dry the lesions, to help the skin to deal with the organisms on its own Calamine lotion zinc paste and 1 per cent brilliant green in zinc paste are useful dressings especially the last named and a lotion of potassium permanganate 1 6 000 may be applied between dressings

DERMATITIS VEGETANS

In the condition of dermatitis vegetans, exuberant granulations forming moist vegetations develop upon other dermatoses which normally tend to affect moist areas *Thus the condition may arise in Darier s disease and in pemphigus* (pemphigus vegetans) it may also arise in neglected seborrhoea and flexural psoriasis and is due to secondary contamination by staphylococci

Treatment

The treatment is that of the primary condition and the avoidance of further vegetating dermatitis is best obtained by the use of bland desiccating powders such as

Pulv Boric	– – – –	10 parts
Zinc Oleostear	– – – –	30 parts
Pulv Amyli	– – – –	30 parts
Pulv Talc	– – – –	30 parts

CHAPTER 16

IMPETIGO

S GORDON

IMPETIGO is a disease caused by an infection of the superficial layers of the skin by streptococci or staphylococci It manifests itself in a variety of clinical types which are broadly correlated with the causal organism and the site of infection

AETIOLOGY

Impetigo is an infection of the skin with the *Streptococcus pyogenes* or the *Staphylococcus aureus* or both While it is commoner for impetigo contagiosa to be caused by a streptococcus and follicular impetigo by a staphylococcus either organism may be the causal agent in any particular case or in any particular epidemic It is also true that a particular form of impetigo may be mainly streptococcal in one country and staphylococcal in another

Impetigo is a contagious disease Infection is spread from one part of the body to another and from one individual to another through the medium of fingers towels shaving brushes and the like and also by direct contact for example in Rugby scrums Maceration of the skin by heat and sweat pre existing trauma or inflammatory change predisposes to infection The discharges from a chronic middle ear or nasal infection may be responsible for the onset of the condition Individual susceptibility to the infection is variable The tendency to spontaneous healing and the formation of circinate lesions suggest the development of zones of immunity

IMPETIGO CONTAGIOSA

Impetigo contagiosa is a contagious form of the disease characterized by the formation of yellow crusts It is the common form of impetigo in children (Figs 109 and 110)

The primary lesion is a flaccid bulla which ruptures very early leaving a raw oozing surface This soon becomes covered by a yellow friable stuck on crust When the crust is removed the fringe of the bulla can usually be seen at the periphery of the lesion while the denuded area in the centre soon becomes covered with beads of serum The lesions may be discrete and few in number or numerous and so closely aggregated as to appear confluent In severe cases the intervening skin may become reddened and oedematous This is particularly common when the pinna of the ear is involved In a rapidly spreading impetigo apart from the typical bullous and crusted lesions macular erythematous lesions pustules and red papules may be seen Exfoliation may take the place of crusting in the dry lesions

With few exceptions impetigo contagiosa is limited to the face in adults (Fig 111) but in children involvement of the hands is not uncommon On the hands the

bullous phase lasts longer than on the face Acute impetigo may involve the scalp, usually however impetigo of the scalp is of the chronic variety, or secondary to pediculosis



FIG 109 —Impetigo contagiosa

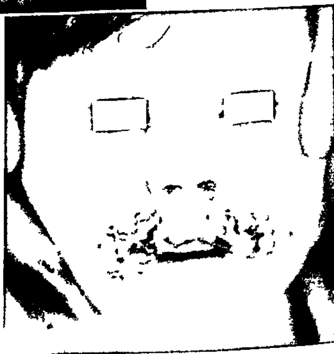


FIG 110 —Impetigo contagiosa

The eruption can be very unsightly and may cause a feeling of tightness and discomfort in the skin but itching is seldom a pronounced feature Enlargement of the regional lymph glands occurs with any frequency only in impetigo of the scalp

The causal organism is a streptococcus but secondary staphylococcal invasion is common, and often staphylococci only are cultured in the earliest stages This form





FIG 111 —Full face and side views of patient with impetigo contagiosa

of impetigo is highly contagious Transfer of the exudate from one part of the body to another or to another individual is largely responsible for the spread of the condition

The disease is self limiting the natural course being to heal without sequelae in two or three weeks The only complications of any consequence are the development of sycosis barbae and the change from an acute impetigo to a chronic form of streptococcal dermatitis Injudicious therapy with strong ointments in the weeping stage predisposes towards the development of these complications

Clinical types

Two varieties of impetigo contagiosa show distinctive features

Impetigo gyrata or circinate impetigo

This is distinguished by the formation of annular lesions as a result of peripheral extension and central involution By coalescence of several lesions gyrate patterns are produced These lesions are often mistaken for ringworms

Impetigo contagiosa bullosa

Apart from the form which occurs in infants and is also known as pemphigus neonatorum (*see* Impetigo Neonatorum) an uncommon type of impetigo in which bullous formation predominates is occasionally encountered in older children and adults It is reported to be commoner in the tropics It differs from the common variety of impetigo contagiosa in that the bullae persist without rupturing or crusting for several days and in that the lesions are more widely distributed The eruption is not limited to the usual areas and may even become generalized The causal organism is stated to be a staphylococcus

The condition which is known in the tropics as pyosis mansoni is fundamentally a form of bullous impetigo although the term is used rather loosely to describe more than one entity

BOCKHART S IMPETIGO

This is a superficial pustular infection of a hairy part It often originates in the neighbourhood of a septic wound and is sometimes started by the application of some irritant preparation such as mercury ointment It is most commonly seen on the limbs The primary lesion starts as a follicular papule which soon becomes a white or yellow pustule surrounding a hair at the point of its emergence from the follicle

Bockhart s impetigo is a staphylococcal folliculitis and not a true impetigo

IMPETIGO NEONATORUM

This condition is also inaccurately referred to as pemphigus neonatorum It is a form of bullous impetigo which occurs in new born infants and has a much graver prognosis than ordinary impetigo In its usual form it appears as flaccid bullae that rapidly rupture and leave a denuded area which continues to enlarge by peripheral extension Fresh lesions appear on any part of the body and may become profusely distributed Such cases may be associated with a rise of temperature

vomiting rapid emaciation and collapse It is staphylococcal in nature highly contagious and may assume epidemic proportions in maternity homes In some epidemics a mortality rate of 30 per cent has been reported It is extremely important in such epidemics as well as in isolated cases to trace the source of infection which might be found in an infected nipple or in the septic finger of a nursing attendant

SECONDARY IMPETIGO

When a dermatosis which is not primarily due to an infection with streptococci or staphylococci becomes secondarily infected with these organisms it is said to be impetiginized or to have become complicated by a secondary impetigo The clinical manifestations vary In many cases it merely means that a weeping eczematous plaque becomes more angry and covered with yellowish crusts The infection may also spread beyond the area of the original dermatosis In some itchy dermatoses notably scabies and pediculosis the resemblance to primary impetigo is closer and the original condition is often obscured by the secondary impetigo Impetigo of the scalp for instance should never be diagnosed as such unless the possibility of pediculosis or ringworm has been definitely excluded Some cases of dermatitis herpetiformis with scanty vesicles and intense itching may also become obscured by severe secondary impetigo It is noteworthy that some intensely itchy skin diseases for instance lichen planus and neurodermatitis seldom if ever become impetiginized

CHRONIC IMPETIGO

Ecthyma

The commonest form of chronic impetigo is ecthyma It occurs most frequently on the lower extremities and buttocks but may affect any part of the body including the face The primary lesion is a vesicle or vesico pustule on an inflamed base The inflammation spreads peripherally and involves the tissue more deeply than an acute impetigo After a few days a dark brown adherent crust forms removal of the crust exposes a shallow ulcer The condition may prove resistant to treatment and when healing has taken place some scarring and sometimes pigmentation remains

Ecthyma is said to be often associated with malnutrition and general ill health Lack of cleanliness and insanitary housing conditions also play a part in its development Ecthyma may be a complication of scabies and pediculosis In tropical countries it often arises at the site of insect stings The organism commonly isolated in ecthyma is a streptococcus but staphylococci diphtheroids and *Bacillus pyocyaneus* have also been found The condition known in South Africa as veld sore and in Australia as Barcoo rot is primarily a form of ecthyma

Streptococcal intertrigo

A very resistant form of chronic impetigo presents itself as a streptococcal fissure and infective intertrigo The retro-auricular fold is the commonest site of involvement but a similar condition may occur at the angle of the mouth—representing one form of perleche—and under pendulous breasts The clinical picture is that of a

painful fissure in the depth of the fold with redness oozing and crusting of the surrounding skin The condition may be a sequel of acute impetigo but usually arises *de novo*

Impetigo pityroides

This condition is common in children It manifests itself as dry scaly patches on the face with the scales arranged in parallel rows and it may persist for years A more widespread variety of scaly impetigo—erythema streptogenes—appears as discoid and annular lesions on the face and body with a marked tendency to depigmentation It is often mistaken for tinea corporis

PATHOLOGY

In acute impetigo the invading organisms penetrate the stratum corneum and multiply between this layer and the stratum mucosum The vesicle forms between these two layers *An inflammatory reaction occurs in the upper part of the cutis with* dilatation of capillaries and extravasation of leucocytes As the destructive changes take place superficially to the stratum germinativum healing takes place without scar formation The vesicle is formed within the prickle cell layer in circinate impetigo In Bockhart s impetigo the lesion develops in the enlarged ostium of the hair follicle The infection is deeper in ecthyma, and the tissue necrosis involves the whole thickness of the epidermis and reaches the corium Healing takes place by scar formation

DIFFERENTIAL DIAGNOSIS

The diagnosis is based on the recognition of the distinctive lesions of each type of impetigo such as the yellow crust and the fringe of a ruptured bulla in impetigo contagiosa the pustule of the mouth of a hair follicle in Bockhart s impetigo the adherent crust covering a superficial ulcer in ecthyma or the parallel rows of fine scales in impetigo pityroides

An important diagnostic differentiation is to distinguish a secondary from a primary impetigo This does not apply to any extent in dealing with a typical impetigo of the face but when the scalp trunk and hands are affected the diagnosis is *not complete unless the possibility of an underlying scabies* pediculosis or papular urticaria has been excluded Equally important is the recognition of an underlying contact dermatitis when an eczematous eruption of the face becomes impetiginized

When impetigo contagiosa affects the beard area in an adult male it is important to note any tendency to formation of follicular pustules as possible evidence of an *early sycosis barbae*

A sulphonamide eruption affecting the face especially in the presence of photo sensitization may become crusted and resemble impetigo

A serious error is to mistake a crusted secondary syphilide of the naso labial fold or the angle of the mouth for impetigo contagiosa It is usually possible in such cases to demonstrate *that the crust covers a flat ulcerated* papule or nodule A complete examination of the patient for other evidence of luetic infection, and a serological test in doubtful cases will obviate this error

In tropical countries the same mistake might be made with cases of secondary yaws

Herpes simplex and herpes zoster of the face and scalp may be mistaken for impetigo In these conditions the vesicles are uniformly small and do not rupture early The eruption remains localized to the original area of involvement Herpes zoster is moreover usually accompanied by severe pain

Occupational pustular eruptions of the arms and thighs due to exposure to oils tars and chlorine derivatives may be mistaken for Bockhart s impetigo

A bullous iodide eruption or a fungating bromide eruption when it occurs on the face may b mistaken for impetigo

Occasionally the early lesions of pemphigus may appear as a few solitary bullae which become encrusted The appearance of lesions in the mouth helps to differentiate the conditions

Circinate impetigo and erythema streptogenes are often mistaken for ringworm In circinate impetigo it is usually possible to make out the fringe of the ruptured bulla and the crusting is much more prominent than in a ringworm The ordinary scaly patch of impetigo pityroides can usually be distinguished from a ringworm by the more uniform redness and scaling but annular lesions of erythema streptogenes can sometimes be differentiated from ringworm only by microscopic and cultural examination of scrapings

Pemphigus neonatorum must be differentiated from congenital syphilis In congenital syphilis the denuded areas are usually limited to certain sites such as the hands feet and buttocks Other evidence of congenital syphilis can generally be found

Streptococcal intertrigo must be distinguished from other forms of intertrigo including flexural psoriasis

In the presence of persistent crusted lesions round the nostrils the possibility of diphtheria must be considered

TREATMENT

The treatment of impetigo does not present a very complex problem Broadly it amounts to the topical application of some antiseptic agent which will destroy the causal organisms with a minimum of trauma to the skin Successful treatment also depends on the choice of a vehicle which is suitable for the stage and type of impetigo for which it is used It is particularly important to avoid the use of ointments in the acute stage Over treatment may convert an acute impetigo into a chronic infective dermatitis

The advent of the antibiotics appeared for a time to offer a very striking advance in the treatment of impetigo It cannot be too strongly emphasized however that the sulphonamide drugs and penicillin are not infallible and that their use in the treatment of impetigo carries with it the risk of sensitization to a therapeutic agent which might be life saving in a more serious illness The reactions to sulphonamides are more frequent and more serious than those to penicillin so much so that the sulphonamides have practically been discarded as topical applications in impetigo

painful fissure in the depth of the fold with redness oozing and crusting of the surrounding skin The condition may be a sequel of acute impetigo but usually arises *de novo*

Impetigo pityroides

This condition is common in children It manifests itself as dry scaly patches on the face with the scales arranged in parallel rows and it may persist for years A more widespread variety of scaly impetigo—erythema streptogenes—appears as discoid and annular lesions on the face and body with a marked tendency to depigmentation It is often mistaken for tinea corporis

PATHOLOGY

In acute impetigo the invading organisms penetrate the stratum corneum and multiply between this layer and the stratum mucosum The vesicle forms between these two layers An inflammatory reaction occurs in the upper part of the cutis with dilatation of capillaries and extravasation of leucocytes As the destructive changes take place superficially to the stratum germinativum, healing takes place without scar formation The vesicle is formed within the prickle cell layer in circinate impetigo In Bockhart s impetigo the lesion develops in the enlarged ostium of the hair follicle The infection is deeper in ecthyma, and the tissue necrosis involves the whole thickness of the epidermis and reaches the corium Healing takes place by scar formation

DIFFERENTIAL DIAGNOSIS

The diagnosis is based on the recognition of the distinctive lesions of each type of impetigo such as the yellow crust and the fringe of a ruptured bulla in impetigo contagiosa, the pustule of the mouth of a hair follicle in Bockhart s impetigo the adherent crust covering a superficial ulcer in ecthyma or the parallel rows of fine scales in impetigo pityroides

An important diagnostic differentiation is to distinguish a secondary from a primary impetigo This does not apply to any extent in dealing with a typical impetigo of the face but when the scalp trunk and hands are affected the diagnosis is not complete unless the possibility of an underlying scabies pediculosis or papular urticaria has been excluded Equally important is the recognition of an underlying contact dermatitis when an eczematous eruption of the face becomes impetiginized

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The exhibition of sulphonamides orally, for a few days only, still has a place in the treatment of a rapidly spreading impetigo with marked oedema of the affected area

Penicillin in the concentration of 1,000 units per millilitre of sterile distilled water used 4 hourly as a spray, or dabbed on to the lesions will often produce a dramatic improvement of the condition within 48 hours Penicillin cream or penicillin jelly in the same concentration is also used, but is not satisfactory in the exudative stage Tyrothricin solution 0 1 per cent has a lower sensitizing potential and is very effective in some cases Its range of usefulness is not yet fully established It is expensive and should, at present, be reserved for the more resistant cases

The older methods of treatment are generally as successful as the above, even if a little slower Crusts are removed either by soaking with pledgets of cotton wool moistened with *hydrogen peroxide or by the application of starch poultices every* four hours It is important that the starch mixture should form a jelly When the crusts have stopped forming the following lotion dabbed on 4 hourly will be found satisfactory in most cases

Zinc Sulph	–	–	– 3 gr
Cupr Sulph	–	–	– 2 gr
Aq Camph	–	–	ad 1 oz

In the drier stage and in the scaly forms of impetigo for example impetigo pityroides a 1 per cent ammoniated mercury paste applied twice daily is preferable *In* chronic impetigo Compound Quinolor Ointment—a proprietary preparation containing benzoyl peroxide and chlor hydroxyquinoline—is a useful alternative In young children a limited area of infection can be treated successfully by covering it with Elastoplast or by painting 3 or 4 times a day with 5 per cent silver nitrate until a coagulum is formed Silver nitrate solution 2–5 per cent *is also used in the treat*ment of streptococcal fissures In impetigo of the scalp in young children treatment is more successful if the hair is shaved

Secondary impetigo complicating scabies or pediculosis can only be treated after the primary cause has been dealt with

Impetigo neonatorum must be regarded as a grave disease and appropriate measures are necessary to maintain nutrition The external treatment is to paint the affected areas *with 1 per cent gentian violet after clipping* away the roofs of the blisters Injections of penicillin in doses of 20 000 units 4 hourly must be given as soon as the condition is diagnosed

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CHAPTER 17

VIRUS DISEASES

C Howard Whittle

INTRODUCTION

The existence of viruses has been known for over half a century They were called ultra microscopic because with the ordinary microscope they were practically invisible and filtrable because they unlike the ordinary bacteria such as strepto cocci and *Bacillus coli* were capable of passing through the finest porcelain filter that could be made For long their presence was recognized by the power of the filtrates to produce identical lesions in experimentally inoculated animals and by the demonstration of protective antibodies in the animals so inoculated

In the last 40 years their identity has been still more firmly established by the discovery of minute elementary bodies in the lesions both from diseased human tissues and from animal tissues and in some of the virus diseases Koch s postulates have been fulfilled

Virus diseases are not confined to animals and a vast new field of diseases in plants has of late been opened up by research in agriculture It was while working with plants as early as 1892 that Ivanowski was the first to demonstrate a filtrable agent as the cause of disease

The chief manifestations of virus infection of the skin in man are warts herpes simplex zoster molluscum contagiosum varicelliform eruptions and vaccinia There are other rarer conditions which are unlikely to trouble the general practi tioner such as lymphogranuloma inguinale orf and foot and mouth disease Lymphogranuloma inguinale is a condition frequently acquired venereally and brought into Great Britain from the tropics by sailors Orf is a contagious pustular dermatitis of sheep and foot and mouth disease an infection of cattle both of which are occasionally transmitted to man

The virus of warts was demonstrated over 40 years ago and filtrates were used to start fresh infections in volunteer subjects but up to the present the virus has not been identified in culture Herpes simplex virus however has been more closely defined and can now be identified with some certainty Vaccinia is regarded as a modified form of variola virus and can also be identified Zoster virus like wart virus can only with difficulty be induced to cause lesions in experimental animals and cannot readily be cultured but inoculation and serological tests have proved its presence Knowledge of the nature of molluscum contagiosum virus is confined to the morphology of the inclusion and elementary bodies

It is highly probable that other skin conditions particularly some bullous or vesicular eruptions may before long prove to be produced by viruses and research is in progress with a view to their discovery and identification

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(a)



(b)



(c)



(d)

(a) Common warts with Koebner's phenomenon (b) Molluscum contagiosum (c) and (d) Milkers nodes

PLATE III

WARTS

There are many types of wart including verruca vulgaris, verruca plana juvenilis verruca plantaris and verruca genitalis Warts are common they occur mostly on exposed parts such as the hands and face and on the knees of children, they are more frequently found in children and young adults but can occur at any age and *in most parts of the body* Their appearance is usually so characteristic that a description is hardly necessary They are elevated circular nodules skin-coloured or slightly paler with a roughened horny surface and to the touch they are firmer than the surrounding skin They are frequently multiple and are common and more abundant in moist areas and in hyperidrotic subjects on areas such as the hands and feet which are usually dry In the moist folds the axillae groins submammary and internatal folds they may coalesce to form macerated bluish white raised sheets *Though* it is possible for warts to grow very large and to form sheets as great as three or four inches in diameter it is rare for them to grow to such size and there seems to be a limiting factor in most skins which curbs their activity, so that they seldom attain a diameter of more than a centimetre They may remain at this size for months or years, and may be tender particularly when on points of pressure or when knocked They are infectious and the virus can be spread from one area to another in a single patient by manual interference such as picking or scratching with the finger nails or from one person to another by contact or even by fomites

Susceptibility to warts varies enormously and though for obvious reasons a dry skin is less vulnerable than a moist the individual differences in susceptibility are not accounted for simply by the degree of moisture on the skin The writer has at *present a nurse working in his clinic who is peculiarly susceptible* to the virus and is liable to recurrent infection of the hands solely from the handling of the out patient notes of patients with warts In her case hyperidrosis is not a factor because she has dry cool hands

Trauma often opens the door for entry to the virus and a row of warts may sometimes be seen appearing on the site of a scratch Some of the single plantar warts *arise on the spot where a nail in the shoe has punctured and damaged* the sole or on the site of a blister from friction The evidence points strongly to the ubiquity of the virus of warts with a high risk but a relatively low susceptibility in most *individuals*

Classification

The classification of warts into plane or juvenile plantar paronychial genital and so on has certain practical advantages chiefly in diagnosis and treatment Common warts on the hands face and knees conform to the description given above and look much alike (Plate III (a))

Plane warts

These are less obvious smaller more delicate flatter paler, less horny and softer and may look very much like lichen planus papules and can at times offer considerable difficulty in diagnosis Their limitation to the back of the hands and to the face the absence of buccal lesions and the presence of obvious warts may help to decide the issue They are perhaps more amenable to simple applications than the

common warts and will sometimes disappear in a few weeks after the application several times a day of weak mercury and salicylic lotions such as the following

Hydrarg Biniod	–	–	– ½ gr
Acid Salicyl	–	–	– 60 gr
Sp Indust Meth	–	–	ad 1 oz

Alternatively the electrocautery can be used and for all except plantar warts it is a rapid fairly effective and only moderately painful measure It is however too distressing for young children

Paronychial warts

Warts of this type occur around the nail folds and in the early stages may appear as slight roughening and thickening of the skin usually associated with hang nails They are less sharply defined than warts on the open skin Really strong salicylic ointment such as paraffin ointment and salicyclic acid in equal parts applied nightly under a finger stall may cause them to separate and come away but in the writer s experience the electrocautery is more certain Electrocauterization is performed in two stages without a local anaesthetic or if necessary in one stage with procaine infiltration

Genital warts

Genital warts may or may not be venereal in their origin but they are due to the same virus as common warts elsewhere on the body and mucosal warts usually respond to such simple measures as the application of the mild astringent antiseptic lotion used for plane warts and a simple talc powder to try to keep the part dry Some success in treating warts in this area has followed the use of 25 per cent podophyllin in liquid paraffin This is painted on and kept in close contact for 8 hours Occasionally they too may need the electrocautery

Plantar warts

These look rather different because the pressure on the sole flattens the wart and presses it into the underlying dermis The increased horny thickening around that arises from the presence of this foreign body often simulates the appearance of a corn Corns of course will only appear on points of pressure (weight bearing) or friction and are usually bilateral and symmetrical whereas warts can occur at any point though they commonly appear beneath the heads of the metatarsals and on the heels The diagnosis may be in doubt but treatment of a corn as a wart will do little harm though the corn will recur if the deformity of the foot is not dealt with

Treatment —There are two methods which have proved themselves most effective in dealing with plantar warts If the warts are single or present in small numbers they may be removed with a fairly sharp curette under a local anaesthetic This minor surgery is well within the compass of a general practitioner s powers Several different sized instruments should be available for the various sizes of wart and the edge of the instrument should be pressed down between the smooth horny surround and the roughened centre and the wart itself scooped out There is usually no difficulty in getting the wart away in one piece but the crater which may be nearly a quarter of an inch deep should be examined for traces of wart tissue and any remaining particles scraped away The edges may be touched lightly with the

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electrocautery The cavity heals quicker if the foot is kept up for a day or two but this is not essential and a felt pad with a hole in the centre can be used to take the pressure off until the cavity is sufficiently healed When there are very large numbers of plantar warts especially if they are very small seedlings or in mosaic form *the treatment of choice is daily soaking* of the part of the sole affected in 5 per cent formalin solution A flat container is used and the sole held in it for 15 minutes The treatment *in rather more than 50 per cent of cases causes the warts to shell out* after 3-6 weeks (Thomson 1943) in the original article by Thomson 3 per cent formalin was used for 10 minutes daily Care should be taken to prevent the formalin reaching and irritating the skin of the sides and dorsa of the feet

The treatment of plantar warts by surgical excision is to be discouraged for two reasons First the healing may be followed by a painful scar, which interferes with walking, secondly the wound is very likely to be infected with the virus and a line of warts *may appear later on the site*

General treatment

For the treatment of warts in general, 20 per cent formalin, or the following paint applied accurately with a paintbrush daily to each wart will sometimes cause them to fall out after 2 or 3 weeks but the treatment must be stopped if the skin becomes inflamed

Cupr Nitras	10 gr
Acid Salicyl.	30 gr
Acetone	60 min
Surgical spirit	ad 1 oz

If freezing with carbon dioxide snow is decided on it is a good plan to soften the warts first with 24 hours fomentation and then to freeze for 60 seconds Occasionally when a few warts have been treated by freezing and have fallen out the untreated warts in the area or elsewhere will also fall out in sympathy This occurrence suggests an immunity reaction *but therapeutic inoculation with wart virus* has not been very successful in the trials recently given it in the United States of America

Nothing so far has been said of x rays or radium *The results are in the* experience of many dermatologists uncertain unless very large doses are given and x ray *burns especially on the sole following* such treatment are not unknown and are apt to be painful and slow in healing, but in expert hands x rays can be of value for the treatment of isolated lesions and the process is painless and is popular with patients

In assessing the value of the different methods of treatment, it is well to remember that warts may disappear spontaneously Some but not all successes with psychotherapy may be explained in this way

HERPES SIMPLEX

The virus of herpes simplex is a clear cut entity and it can now be isolated and recognized in routine fashion by virus workers Like the virus of warts it is a ubiquitous organism, is probably present on most mucous membranes especially the mouth at some time and may be fairly constantly present in some mouths The lesions it produces are familiar as a group of tense shotty *vesicles on a slightly*

oedematous inflamed base on the lips chin cheeks and less commonly on the external genitalia There is usually some burning and itching accompanying the formation of the blisters which dry and form crusts in a few days Another spot where the lesions can arise is on the buttocks and they may closely simulate zoster but unlike it they are liable to recur

Herpes simplex of the lips is seen commonly accompanying a cold or febrile catarrh in children and less frequently in adults but there seems to be a variety of agencies besides infections such as pneumonia and malaria that can precipitate an attack Menstruation sudden changes of weather mild and transient gastro intestinal disturbances some drugs and even emotion or excitement can act as a trigger Certain subjects are peculiarly liable to attacks which recur again and again often on the same spot

Diagnosis and treatment

Difficulties in diagnosis are encountered only when the infection appears on unusual places Patches recurring on the cheeks are often misdiagnosed as impetigo and the writer has seen several cases of genital herpes referred for suspicion of primary syphilis or scabies A careful history of symptoms the multiple but local ized nature of the lesions and the absence of induration and of spirochaetes in dark ground examination will usually settle the question

Treatment of the lesions is a matter of protection and prevention of secondary infection Unna s paste painted on affords a good protective dressing and *penicillin* in spray or cream will help to prevent sepsis More difficult is the problem of pre venting recurrences Inoculation with an autogenous vaccine of the virus has met with only partial success and measures designed to improve the general health to remove s ptic foci and to correct faulty habits of life together with small doses of x rays locally should be tried as they have sometimes proved of benefit American workers have reported success by repeated vaccination of the patient but the results in Great Britain have been disappointing

ZOSTER (HERPES ZOSTER)

Shingles (from cingulus Latin a girdle because of the girdle like distribu tion) is a familiar clinical entity which can arise in any of the cranial or spinal sensory segments and is so often unilateral that the exception is an extreme rarity The virus is quite distinct biologically from the virus of herpes simplex It is iden tical with or very closely related to the virus of varicella (Figs 112 and 113) this will explain why not infrequently a child develops chicken pox after contact with a case of zoster The virus however behaves differently in the two diseases and in zoster it is limited in its perceptible effects to the affected posterior root ganglia and to the skin they supply Pain in the segment with burning and hyperaesthesia in the skin may precede the eruption by 12 hours or so and the neighbouring lymph glands may be tender and enlarged early Patches of oedematous erythema arise in the distribution of the segment and within a few hours tense shotty hard and deep-seated blisters begin to form on these raised oedematous bases The blisters are in clusters and like herpes simplex are usually not greater than 3 or 4 milli metres in diameter but they may coalesce There are areas where the infection is



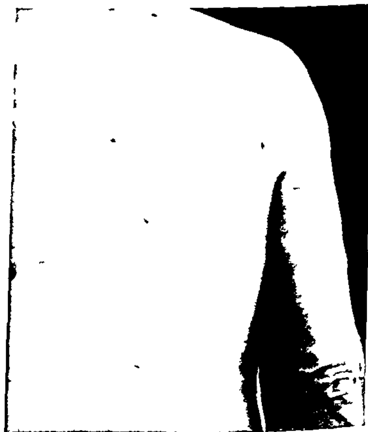


Fig 112 —Zoster with concurrent varicelli form eruption

not merely painful but serious because of the permanent damage from scarring which may follow the healing of the blisters Chief of these areas is the eye and if the ophthalmic branch of the fifth cranial nerve is affected the cornea may be permanently damaged and the sight impaired

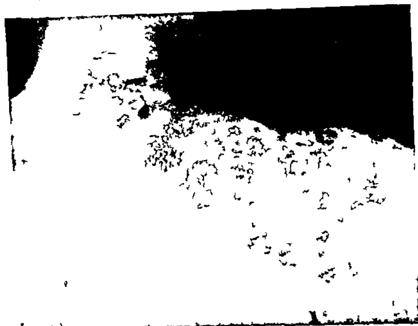


FIG 113 —Zoster with varicella

Diagnosis and treatment

The diagnosis is seldom in doubt but occasionally it is missed when the attack is mild with few blisters and little erythema or pain is present The band like segmental distribution of the eruption even if otherwise atypical should suggest the diagnosis

The treatment is somewhat similar to that given for herpes simplex namely protection and prevention of sepsis so that subsequent scarring may be reduced to a minimum With ophthalmic zoster the greatest care must be taken to mitigate the effect on the cornea and it is *best to enlist the help of an ophthalmologist* Scarring may occur in any part but is most common after trigeminal zoster Moreover in this area there is apt to follow and particularly in elderly folk severe spasmodic pain which is difficult to treat and may persist for months Local x ray treatment for post herpetic neuralgia is often of great value and offers the most hopeful means of relief

A recently introduced measure for treatment of zoster in the early stages is the intramuscular injection of 0 5 millilitre of pituitrin which sometimes apparently aborts an attack and relieves pain The injection can be repeated if necessary on several successive days

MOLLUSCUM CONTAGIOSUM

Molluscum contagiosum is not very common but its features are so characteristic that there is little difficulty in diagnosis once the condition has been seen (Plate III (b)) The lesions are commoner in children and occur most frequently on exposed parts such as the face hands and arms but they can occur at any age and I have seen and treated dozens of them on the trunk of a doctor well over 60 years of age, who did not know what they were They present as grouped pinkish white dome shaped shiny tumours with a central depression or umbilication and they vary in size up to 6 or 8 millimetres Though symptomless they may multiply rapidly by auto inoculation They possess probably about the same degree of contagiousness as warts as between person and person but may spread more rapidly than warts over the skin surface

Histologically they afford a specially fine example of virus infection of the epidermis, with inclusion bodies readily seen in stained microscopic sections or in the white keratinous material which can be expressed from the papules

Treatment

The treatment is simple and effective and can be carried out readily in general practice The centre of each lesion is expressed or scooped out with a slightly sharpened match stick, the end of which can be dipped in pure carbolic and applied to the cavity There is no scarring and recurrence is practically unknown

OTHER VIRUS INFECTIONS

Vaccinia

When a previously unvaccinated person is vaccinated the resulting infection with the vaccinia virus though accompanied often by slight fever and malaise is usually localized, with erythema blister formation and finally crusting lasting over a period of ten days or more There are, however occasionally more widespread skin reactions and in some subjects an extensive or even generalized blistering erythema may occur with comparatively severe constitutional reaction This is more apt to happen when areas of skin are already damaged as in extensive eczema For this reason it is wise to postpone vaccination in babies suffering from infantile eczema and it is dangerous to expose such infants to contact with recently vaccinated subjects

Kaposi's varicelliform eruption

A group of conditions have been described under this heading They are uncommon and are characterized by an acute illness with fever and the appearance usually on the exposed parts of circular bullae The victims are infants or children who are already the subject of eczema and the eruption affects chiefly and sometimes only the areas previously eczematized (Fig 114) It is not however confined to children and I have recently seen two adults affected on different and unrelated occasions

Though cases may arise singly epidemics have been recorded McLachlan and Gillespie (1936) for example describe an epidemic at Glasgow which swept through



FIG 114—Kaposi's varicelliform eruption

a children's ward in which were a number of patients with eczema scabies and impetigo Virus studies were not made but it is clear from the study of other cases that the condition can be due to at least two agents either the vaccinia virus from contact with a person who had just been vaccinated or the virus of herpes simplex

The blisters rapidly become pustular and their large size (1 centimetre or more diameter) dome shape and umbilicated centre frequently suggest the diagnosis of smallpox Indeed variolıform would be a better term than varicelliform The pustules may coalesce to give areas 3–4 inches wide which ulcerate when the sur face is lost The relief of pressure on these raw areas is a major problem in nursing

Extensive cases are treated in much the same way as extensive burns with Tulle Gras and bland oily applications locally and penicillin intramuscularly to counter act secondary septic infection The severity of the disease is variable—five out of the sixteen children affected in the Glasgow epidemic died It is interesting to note that only one of the sixteen children had been vaccinated

MILKERS NODES (MILKERS WARTS)

Milkers nodes (Plate III (c) and (d)) are localized to the fingers and confined to those who handle and milk cows They are due to infection probably through an abrasion In some cases the virus appears to be identical with that found in the infected udders of the cow (cowpox) The virus is probably distinct from vaccinia though it is related to it The condition is uncommon and does not give rise to disturbance of general health, there is little local discomfort It disappears spontaneously in a few weeks

The lesions are granulomatous, may resemble rather soft warts up to 1 centi metre in diameter, and appear on the backs or sides of the fingers but the lesions are sometimes frankly bullous They are usually multiple and may break down or have their surface abraded to discharge a little serous or slightly turbid exudate The only treatment needed is protection from and prevention of secondary sepsis

I am indebted to Dr M G P Stoker and Dr J A R Miles of the University Depart ment of Pathology Cambridge for helpful criticisms and suggestions on details of virus pathology

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CHAPTER 18

SYPHILIS

G L M McElligott

INTRODUCTION

Though a text book of dermatology must necessarily concern itself with syphilis it should never be forgotten that this is a grave chronic constitutional disease the cutaneous manifestations of which are merely so many diagnostic beacons only too often occluded and that such manifestations invariably disappear after the most inadequate treatment or often indeed after none at all

Traditionally the course of the disease is divided into three stages and from the dermatological standpoint this division is adequately accurate

THE PRIMARY LESION

The primary lesion occurs at the site of inoculation which because of the venereal nature of the disease is usually on or near the genitals It appears within a period of from 10 to 90 days after infection (usually about 25 days) and commences as a papule which almost invariably ulcerates In most cases a marked fibroblastic reaction causes it to become indurated while at the same time the regional lymph glands enlarge There is almost always a complete absence of pain and tenderness in both the primary lesion and the accompanying adenopathy

Although the classical chancre is a hard painless non tender ulcer of an almost cartilaginous consistency and over 90 per cent of all primary lesions ultimately take this form a few of them are atypical and may be soft tender and in the presence of an accompanying secondary infection even painful This possibility underlines the absolute necessity of subjecting every genital ulcer to dark field examination and of repeating the serum tests for syphilis over a minimum period of 3 months Generally speaking serum tests become positive 10–20 days after the first appearance of the chancre but occasionally a positive reaction is delayed for several weeks



Fig 115 —Primary stage a meatal chancre

Though the primary lesion occurs at the site of inoculation multiple chancres from auto-contact infection are not un common Thus a primary sore on the glans penis may give rise to a second

chancre on the contiguous mucous surface of the prepuce or in the female the opposing labium may become infected from the original chancre on the other side

Usual sites of the primary lesion in the male are the coronal sulcus the glans penis and more rarely the meatus (Fig 115) very occasionally the chancre is intra urethral, in which case there is a slight serous urethral discharge with some induration in the first inch of the urethra Chancres are also sometimes seen on the shaft of the penis (for example at the peno scrotal angle when a condom has been used) (Fig 116) on the scrotum on the lower abdominal wall (Fig 117) and as the result of sodomy at the anal orifice (Fig 118) or even inside the rectum In



FIG 116—Primary stage a chancre at the peno-scrotal angle (condom chancre)



FIG 117—Primary stage a chancre on the lower abdominal wall

women the usual sites are the labia majora and minora the clitoris the posterior fourchette and quite commonly the cervix uteri Chancres on the cervix are often missed as the resulting adenopathy being intra abdominal escapes observation and the lesion itself may easily be mistaken for an erosion

Extragenital chancres are by no means common the least unusual sites being the lips (Fig 119) tongue and tonsil Such infections sometimes occur through kissing a person who has secondary syphilis and very rarely inoculation may take place



Fig 118—Primary stage an anal chancre



Fig 119—Primary stage chancre on the lower lip

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Fig 116 —Primary stage a chancre at the peno-scrotal angle (condom chancre)



Fig 117 —Primary stage a chancre on the lower abdominal wall



FIG 121 —Secondary stage papular eruption on the soles of the feet



FIG 122 —Secondary stage muco-cutaneous junction

through a minute abrasion on the ungloved finger (Fig 120) of an examining doctor or nurse Very occasionally, chancres are met with on the nipple or the conjunctiva in the latter case the local reaction is considerable and if the condition is not diagnosed promptly loss of vision will probably occur



Fig 120 —Primary stage a digital chancre

The diagnosis of primary syphilis depends upon finding the specific spirochaete or upon a definitely positive serum test and it cannot be too strongly stressed that the so called therapeutic test is never justifiable in the early stages of the disease

THE SECONDARY STAGE

It is a common error to assume that a syphilitic infection is localized to the inoculation site and the regional lymph glands during the primary stage and that the infection becomes generalized only when the secondary manifestations appear or the blood tests become positive That such is not the case is demonstrated by the fact that the blood of donors in the sero-negative primary stage has been instrumental in transferring the disease and animal experiments have shown that a spirochaetaemia is present within a few hours of inoculation The practical corollary to this is that a syphilitic infection may be passed on by means of infected seminal fluid or other genital secretions during the incubation period of the disease

Though slight malaise aching in the long bones and occasionally headache may sometimes accompany the secondary stage such constitutional disturbances are by no means constant and as often as not the patient feels well enough Generally speaking, however when florid signs are present there is usually some slight malaise

In 3–8 weeks after the appearance of the primary lesion the secondary stage of the disease commences As the manifestations of this stage are evidence of a more or less massive spirochaetaemia it is perhaps inevitable that the skin mucous membranes and lymph glands are affected It must be remembered however, that immune processes and other host factors will so condition the severity of the infection that, whereas in one case signs and symptoms may be overwhelmingly obvious in another they may be so insignificant and transient as altogether to escape the notice of the patient or even the examining physician

The earliest secondary cutaneous lesion most often takes the form of a faint pink, macular blush that is usually generalized over the whole body This may be so faint as to be difficult to discern on the more exposed parts where it is liable to be masked by sunburn, and in swarthy individuals more particularly in coloured people it often cannot be seen at all It is best viewed by daylight or in a white artificial light at a distance of several feet Sometimes this rash may fade within a couple

rise to a good deal of irritation and are sometimes mistaken by the patient for piles

A pustular papular rash is occasionally seen in undernourished or anaemic patients and these septic looking papules are generally seen on the scalp or face (Fig 125) The lesions are not necessarily pyogenic but are due to a softening or breaking down of the papule the exudate from which dries forming a crusty scab (Figs 126 127 and 128) Tissue destruction proceeds under the crust which sometimes becomes raised in characteristic concentric whorls so that it assumes the appearance of a brown limpet shell adhering to the surface of the skin This lesion is unusual and is known as rupial



Fig 125—Secondary stage hypertrophic papules at mucocutaneous junction



Fig 126—Secondary stage large pustular papule

of weeks and that may be the end of the secondary manifestations Usually however the colour of the macules deepens to a typical raw ham shade and careful palpation with the backs of the fingers will show them to be slightly elevated

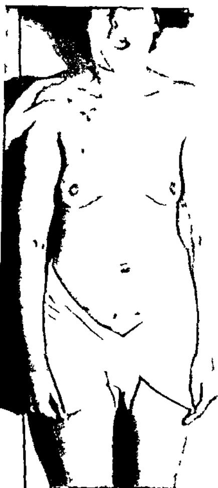


Fig 123 —Secondary stage generalized papular eruption

The macular rash may be accompanied or succeeded by a papular eruption (Figs 121 122 and 123) These papules which are definitely infiltrative lesions take the form of conical or lenticular raised patches varying in size from that of a pin s head to a *shilling* they, too are of reddish brown colour and often develop at the mouth of a sweat gland Each papule is usually tipped with a small epithelial scale which when detached leaves a shiny surface underneath *They are often seen on the palms and the* soles and in these places may sometimes feel shotty to the touch

In moist situations, *such as around the* anus or vulva the armpits under the breasts or between the toes (Fig 124) the papules tend to be larger raw and scaleless owing to rapid destruction of an already devitalized *epithelium* which becomes sodden and heaped up forming flat wart like excrescences These hypertrophic lesions are known as condylomas, and spirochaetes are always present in large numbers in their exudate Perianal condylomas through secondary infection may occasionally give

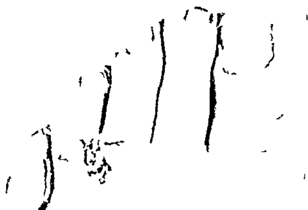


Fig 124 —Secondary stage hypertrophic syphilide (condyloma) between the toes

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Fig 1 5—Secondary stage hypertrophic papules at muco cutaneous junction



Fig 1 6—Secondary stage large pustular papule

In rare cases pustular papules break down very rapidly forming deep ulcers covered by greenish sloughs The patient is gravely ill often becomes cachectic and may die sometimes as a result of routine arsenical treatment which he is too weak to tolerate This condition known as malignant syphilis is probably due to a complete lack of resistance to the infection and cases are on record in which the



Fig 127 —Secondary stage note hypertrophic papules under and between the toes



Fig 128 —Late secondary framboesiform syphilide of the nostril

serum reactions remained negative although spirochaetes abounded in the lesions

The papular rash sometimes takes on other atypical forms due either to unusual grouping of the papules or to modifications in their shape or size they are exemplified as follows

(1) Large scaling papules (psoriasiform syphilides) in which the lesions can usually be distinguished from those of true psoriasis in that they are of a typical dusky red colour the scabs being easily detached without leaving a bleeding surface

(2) Annular or ring like syphilides which may be scaly or smooth

(3) Corymbose syphilides in which a large papule is surrounded by a cluster of smaller ones so called from its resemblance to the corymb of some flowering shrubs or a grape vine

These three types are most often seen late in the secondary stage and the annular or *circinate* lesions are usual manifestations of cutaneous relapse after inadequate treatment

The appendages of the skin are frequently affected during the secondary stage the hair falling out and the finger nails and toe nails becoming *brittle* and fissured



FIG 129 —Secondary stage syphilitic alopecia

Syphilitic alopecia (Fig 129) is distinguished from baldness due to other causes by its characteristic moth-eaten appearance and is in marked contrast to the clean-cut alopecia areata The prognosis is good normal hair growth being restored a few weeks after the commencement of anti syphilitic treatment

Patchy leucoderma of the skin covering the neck and shoulders is an uncommon sequel of a macular syphilide It is most frequently seen in brunettes and in spite of treatment persists for months or even years

During the secondary stage the mucous membranes of the mouth, throat and genitals are frequently affected, the first sign in the mouth often being a pronounced erythema of the soft palate which stands out in marked contrast to the paler hard palate Later very superficial painless ulcers (mucous patches) may appear on the fauces, tonsils, buccal mucous membrane or tongue, and similar lesions are often seen on the genital mucous surfaces In the throat the ulcers are sometimes serpiginous and are covered with a mucoid exudate when they are popularly known as *snail track ulcers It is important to remember that specific spirochaetes abound in* all these lesions which are consequently very infectious

THE TERTIARY STAGE

The cutaneous manifestations of the final stage of syphilis are generally seen after a *period of apparent latency This period may vary from 3 to 20 or more years after* the disappearance of the primary or secondary signs if indeed these have not escaped the patient s observation Very occasionally, however precocious tertiary *lesions may appear within a few months of the subsidence of a secondary rash* though on the other hand late cutaneous manifestations may be deferred until the end of a long and healthy life The writer remembers seeing in 1938, a late syphilide on the arm of a hale old man aged 75 whose primary infection treated *secundum artem* at the time occurred in the Egyptian War of 1891

One of the most usual lesions often a comparatively early manifestation of tertiary syphilis is the nodular cutaneous syphilide (Fig 130) The lesion consists



Fig 130 —Nodular cutaneous syphilide tertiary eruption

of a curved line of intradermal nodules dusky red in colour generally covered with scabs or crusts The nodular line tends to meet itself often forming a rough circle *varying in size from that of a half crown to a dinner plate* Sometimes a slight patchy very superficial ulceration occurs and in parts of the lesion spontaneous healing takes place with formation of scar tissue If untreated the process extends



FIG. 131.—Third stage gangrene of the toes due to syphilitic endarteritis of the dorsalis pedis artery

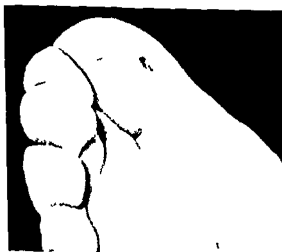


FIG. 132.—Tabes dorsalis—perforating ulcer

sometimes taking on a concentric spiral or an S shaped formation The lesion is occasionally confused with lupus vulgaris, but the differential diagnosis is comparatively simple since the syphilitic process advances far more rapidly than does the tuberculous one

In tertiary syphilis of the skin or, for that matter of any part of the body the tissue reaction to the specific toxin is essentially the same It consists in an infiltration of mononuclear cells around the arterioles supplying the affected part a periarteritis and later an obstructive endarteritis of these vessels resulting in necrosis of the tissues supplied by them (Fig 131) A fibroblastic reaction results in varying degrees of fibrosis which may wall off or even totally obliterate the infected area Such a walled off area of necrotic material is known as a gumma and is in fact a syphilitic abscess When it occurs near the surface of the body the overlying skin or mucous membrane is soon involved the lump breaks down and ulceration takes place The resulting ulcer is typically punched out and comparatively deep (Fig 132) it base being occupied by the adherent necrotic material from the centre of the gumma Later this wash leather slough separates leaving a healthy granulating surface which on healing becomes covered over by delicate scar tissue leaving the so called tissue paper scars It will be understood now that the nodular cutaneous syphilide is in fact a succession of small superficial gummas in which fibrosis rather than necrosis is the prominent feature

CONGENITAL SYPHILIS

The skin lesions of infantile congenital syphilis correspond roughly to those of secondary syphilis in the acquired disease Maculo papular eruptions are commonly seen in infected babies of ages under 3 months but rarely appear during the



Fig 133 —Congenital syphilitic condylomas (perianal)

first 2 or 3 weeks of life Desquamation of the delicate skin of the fingers and toes is often a prominent feature and a snuffling ailing infant with an indefinite rash and peeling fingers or toes should always be strongly suspect particularly if the liver and spleen are found to be enlarged The diagnosis will be confirmed by positive serum tests

In late congenital syphilis skin lesions are not common but when they do occur are identical with the tertiary lesions in the acquired disease (Fig 133)

THE DIAGNOSIS OF SYPHILIS

As serum tests do not usually become positive until 6–8 weeks after infection the prompt diagnosis of primary syphilis depends upon finding the specific spirochaete The chancre is cleansed with normal saline solution dried and its edge gently scarified with a blunt instrument or a piece of gauze until it oozes blood After an interval of about a minute clotting commences and the separated serum is collected in a capillary tube This is then sealed at both ends with sealing wax or candle grease carefully packed in cotton wool and sent to the nearest laboratory for dark field examination. At the same time blood is sent for a *serum test* If repeated dark field examinations are negative there is no choice but to wait until such time as the blood tests become definitely positive before commencing treatment and meanwhile to treat the case as one of chancroid A diagnosis of primary syphilis must never be made on clinical grounds alone On the other hand no case of genital ulceration should be finally diagnosed as non syphilitic until repeated serum tests have remained negative for 12 weeks

In late syphilis of the skin the serum tests are almost invariably positive *but here it is important to realize that cutaneous lesions are only too often outward signs of* more serious late effects and a careful physical examination *a complete in*vestigation of the spinal fluid and *if possible a skiagram* of the heart and great vessels should always be carried out before treatment is begun

THE TREATMENT OF SYPHILIS

It is already *manifest* that penicillin is the most powerful anti spirochaetal agent known and *during the last 4 years* in hundreds of thousands of cases of early syphilis the patients have been successfully treated with penicillin alone The fact however that in the past commercial penicillin has been shown to contain certain undefined proportions of the comparatively inactive penicillin IV(K) has probably justified the decision made by the Ministry of Health in 1945 not to recommend its exclusive use in the treatment of early syphilis but to advise that one standard course of neoarsphenamine and bismuth be given *in* addition It is known that as small a total dosage as 5 grammes of neoarsphenamine and 2 grammes of bismuth metal given concurrently will cure at least 70 per cent of patients with early syphilis although to advance this cure rate to over 90 per cent it is necessary to give at least three such courses in less than 12 *months* It is fair to state that American opinion is still strongly in favour of treating early syphilis with penicillin alone *provided* that

(1) Only crystalline penicillin II(G) is used
(2) The period of administration is not less than 8 days

(3) The total dosage is not less than 4 million units

(4) When aqueous solutions are used injections should be given not less frequently than 3 hourly

The writer s present opinion is that given penicillin the II(G) content of which is not less than 85 per cent, arsenicals in early syphilis are probably unnecessary He is however still reluctant to abandon bismuth which the experience of the last 25 years has shown to be so safe and so essential an adjuvant to the arsenical treatment of syphilis in all its stages

As it is so often impracticable for civilian patients to be admitted to hospital for treatment it is now usual to treat syphilis on an ambulatory basis and for primary and secondary cases the following scheme can be recommended Procaine penicillin a clinical compound of penicillin G and procaine hydrochloride, will probably replace the oil and beeswax suspensions for the ambulant treatment of early syphilis in the future

Method of treatment

Not less than 8 daily intramuscular injections of 600 000 units of penicillin in an oil and beeswax suspension should be given these are immediately followed by 10 weekly injections of neoarsphenamine 0 6 gramme and 10 intramuscular injections of an insoluble suspension of bismuth metal (0 2 gramme) or a bismuth salt in equivalent dosage Some malaise and a temporary exacerbation of the chancre or rash is often noticed about 12 hours after the first injection of penicillin This is known as the Jarisch Herxheimer reaction, and is said to be caused by a sudden toxaemia consequent on the rapid destruction of specific spirochaetes In early syphilis it can always be ignored

Follow up

Serum tests should be made at monthly intervals for 6 months and thereafter every 3 months for a minimal period of 2 years At least one examination of the spinal fluid must be made 6 months or more after treatment and it is important that the skin and mucous membranes be inspected periodically for signs of muco cutaneous relapse Sero positive cases may take 6 months or more to revert to negative and meantime the serologist can help the clinician by informing him whether the degree of positivity in succeeding tests is declining or increasing In the rare event of its increasing 4 months or more after the end of treatment it is safest to presume failure and after an examination of the spinal fluid to exclude asymptomatic neurosyphilis to give at least 2 further courses of penicillin neoarsphenamine and bismuth

Effects of penicillin

Many years must pass before the effects of penicillin in late syphilis can be properly assessed but even at the present stage it seems certain that all cases should have the benefit of this almost completely non toxic substance in addition to *if not* in substitution for other forms of treatment

On account of its very powerful anti spirochaetal action it is probably safer not to use it initially in cases in which there is a likelihood of cardiovascular syphilis as

a cardiac Herxheimer reaction might conceivably be dangerous Hidden aortic lesions are often present in late syphilis and in these cases it is a good rule to commence treatment with 4 or 5 weekly injections of bismuth accompanied by iodides given orally

CHANCROID (SOFT SORE ULCUS MOLLE)

This is an acute localized infectious venereal disease caused by Ducrey s bacillus (*Haemophilus ducreyi*) The incubation period rarely exceeds 5 days and the disease begins as a vesico pustule which quickly breaks down forming a ragged edged painful tender ulcer at the site of inoculation usually on or near to the genitals In most cases the inguinal glands enlarge becoming matted together by an acute inflammatory process The resulting bubo is painful and tender and soon suppurates the overlying skin becoming red and inflamed If left without treatment spontaneous rupture occurs the abscess discharging through a ragged edged angry looking ostium

It is important to realize that in Great Britain chancroid is an uncommon disease and in every case of genital ulceration syphilis must be rigorously excluded by repeated dark field examinations as well as by serum tests over a period of 12 weeks In positive cases Ducrey s bacillus can sometimes be seen in direct smears from the ulcer but too much reliance must not be placed upon this test

Intradermal injections of 0 1 millilitre of a vaccine made from Ducrey s bacillus (dmelcos) are occasionally useful when the diagnosis is in doubt an indurated papule appearing at the injection site after 48 hours in positive cases

Treatment

Most cases of chancroid react well to sulphonamides Sulphathiazole and sulphadiazine are equally effective and a total of 30 grammes in 6 days is usually an adequate dosage Fluctuating bubos should be aspirated repeatedly during chemotherapy and incision is rarely necessary Ducrey s bacillus though resistant to penicillin is sensitive to streptomycin this should facilitate the treatment of the occasional sulphonamide sensitive patient when supplies of this still very rare substance improve

LYMPHOGRANULOMA VENEREUM

This venereal condition (syn lymphogranuloma inguinale Nicolas Favre disease climatic bubo lymphopathia venereum) though common in tropical and subtropical areas is extremely rare in Great Britain being but occasionally seen among seafarers and other travellers The causative agent is a filtrable virus which can be artificially cultured in the yolk sac of the chick embryo The incubation period is from 5 to 20 days The primary lesion takes the form of a small transient vesicle or ulcer at the site of inoculation and more often than not escapes the patient s observation After about a month the regional lymph glands become inflamed and enlarged and there is generally a good deal of periadenitis As this commonest enlargement is usually inguinal the mass becomes characteristically grooved by the inguinal folds In women the condition is sometimes undetected for a long time as when the primary lesion is on the cervix or the upper vaginal wall the resulting adenitis is intra abdominal In these cases stricture of the rectum

(3) The total dosage is not less than 4 million units

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CHAPTER 19

TUBERCULOSIS AND SARCOIDOSIS OF THE SKIN

E W PROSSER THOMAS

CLASSIFICATION OF TUBERCULOSIS

THE CUTANEOUS manifestations of tuberculosis are usually classified into two main groups namely (1) various clinical forms—mostly localized—which are of proved tuberculous nature and (2) the tuberculides—eruptive and disseminated lesions of symmetrical distribution—which though not fulfilling all Koch s postulates are regarded as of tuberculous origin because of their tuberculoid architecture and their frequent association with a tuberculous focus elsewhere Sarcoidosis is also included in this group by those who believe it to be a phase of tuberculosis

CUTANEOUS TUBERCULOSIS PROPER

Mycobacterium tuberculosis may reach the skin (a) by direct inoculation through a breach of the surface as in lupus verrucosus and some cases of lupus vulgaris (b) via the blood stream or lymphatic system from a distant tuberculous focus and (c) by continuity from an underlying tuberculosis of lymph gland bone or joint As a rule the infection remains localized and produces a chronic granulomatous infiltration of the skin the tuberculous nature of which can be proved by the presence of the bacilli though they are always few and hard to find and by a positive result when some of the affected tissue is inoculated into a susceptible animal such as the guinea pig Histologically the lesions are of typical tuberculous structure The tuberculin test is positive

Primary tuberculous complex *in the skin*

Primary cutaneous tuberculosis which is equivalent to the Ghon tubercle in the lung is exceedingly rare but it does occur very occasionally usually in a child who has never previously been infected at any site with tubercle bacilli and who is hence tuberculin negative The primary complex in the skin or tuberculous chancre is due to the direct inoculation of organisms for example via an insect bite or abrasion or from the kiss of a tuberculous subject and consists of an indurated inflammatory nodule with an umbilicated or ulcerated centre resembling a syphilitic chancre Because this is the first infection and allergy has not yet been established the organisms soon reach the regional lymph nodes and set up a tuberculous lymphadenitis or bubo Both the chancre and the lymph node contain bacilli in abundance and have all the classical microscopical appearances of tuberculosis Usually within a few weeks of the primary inoculation the tuberculin reaction becomes positive and this may be accompanied by the appearance of erythema nodosum in its usual site on the shins

resulting from a breaking down periadenitis with adhesions may sometimes give rise to the first noticeable symptoms

Diagnosis

Diagnosis is by means of the Frei test in which 0 1 millilitre of a standardized antigen made from the infected yolk of a chick embryo is injected intradermally into the skin of the forearm Into the opposite arm a control injection of uninfected yolk is made A positive reaction appearing in from 48 to 72 hours is indicated by a raised inflammatory area at the injection site, which persists for several days As in chancroid syphilis must be rigorously excluded and serum tests repeated up to 12 weeks A specific complement fixation test has recently been evolved cultured virus being used as an antigen it is said to be reliable in all stages of the disease

Treatment

Early cases usually respond well to sulphonamides, repeated aspiration always being necessary when suppurative adenitis is present this often presents some difficulty as the bubo is liable to be multilocular and the needle must be moved round in several directions so that the trabeculae are broken down In late cases especially those in which there is rectal stricture radical surgical treatment is sometimes necessary, though much can often be accomplished by progressive rectal dilatation with bougies

GRANULOMA INGUINALE
(GRANULOMA VENEREUM ULCERATING GRANULOMA OF THE PUDENDA)

This tropical disease thought to be venereal is as its name implies a granulomatous ulcerative process of the external genitals and the surrounding skin The causative organism is the Donovan body—probably a protozoon—which like the virus of lymphogranuloma venereum has also been cultured on the yolk sac of the chick embryo After a variable incubation period of from 1 to 12 weeks soft red nodules appear on the skin and break down rapidly forming areas of red velvety granulation tissue which spread by local extension Secondary infection invariably occurs with widespread ulceration and necrosis of soft tissues The disease is chiefly prevalent among Negroes and Greenblatt has described it as a terrible affliction which slowly and inexorably ravages its victims In the past treatment has been unsatisfactory though in some cases the antimonial preparations such as Fouadin, Anthiomaline and tartar emetic have acquired a certain reputation Excellent results have recently been obtained with streptomycin (4 grammes daily for 5 days), and in a series of 59 patients treated by Greenblatt there were only four failures (Greenblatt Kupperman and Dienst 1947) Recurrences have so far yielded to re treatment

REFERENCES

Greenblatt R B Kupperman H S and Dienst R B (1947) *Proc Soc exp Biol N Y* 64 389

Tuberculous chancre may involute in due course leaving a simple scar or may be transformed into lupus vulgaris or tuberculosis verrucosa

Lupus vulgaris

Lupus vulgaris is the commonest clinical form of frank cutaneous tuberculosis The disease which attacks females much more often than males usually begins in childhood or adolescence but can occur considerably later in life The favourite

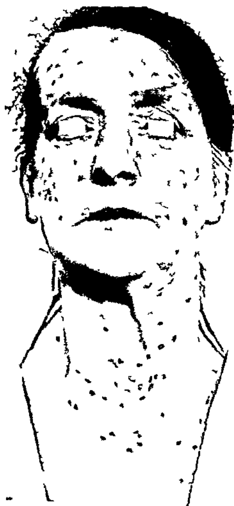
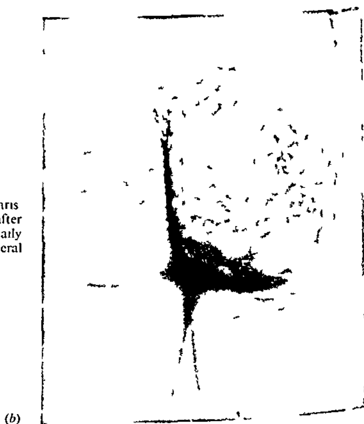


Fig 135—Acute disseminated type of lupus

sites are the nose cheeks ears and neck less often affected are the buttocks and limbs (Fig 134) Occasionally the lesions are multiple and rarely a widespread haematogenous disseminated form of lupus occurs for instance as a sequel to an acute specific fever such as measles (Fig 135)



(a)



(b)

Fig. 134.—Severe lupus vulgaris (a) before calciferol (b) after calciferol 100 000 units daily for 10 months and general sunlight baths

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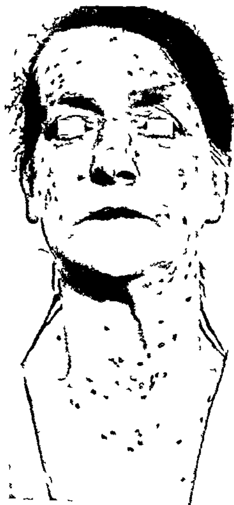


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In facial lupus the main portal of entry of tubercle bacilli is the nasal mucosa organisms being inhaled into a crack or abrasion or conveyed into the nasal fossae *by the fingers, the common impetigo of children may be an avenue of entrance* From the inferior nasal meatus the disease may extend upwards to the eyelids via *the lacrimal passages or backwards to the nasopharynx mucous membrane involve*ment, namely of the lips gums, palate or buccal cavity occurs in a large proportion of cases *Intranasal lupus which may erode and perforate the septum is* often masked by the accumulation of scabs and crusts produced by heavy secondary infection (Fig 136) *on other mucous surfaces lupus presents as soft red fleshy*



Fig 136 —Ulcerated lupus Phlyctenular keratitis

proliferations interspersed with ulcerations From within the nose lupus may spread outwards to the adjacent skin of the nose upper lip or cheek (Fig 137) in some cases however the nasal or buccal mucous membrane is involved *secondarily to cutaneous lupus in the central area of the face*

Lupus varies greatly in its clinical appearances The typical early lesion is a slightly elevated yellowish red or brown semi *translucent nodule* By the development circumferentially of new nodules an elevated plaque or a flat, red, scaly patch is formed (*Fig 138*) *When such a patch is emptied of its hyperaemia* by compression with a glass slide or a glass tongue depressor (diascopy) the individual *lupomas stand out as honey coloured or apple jelly spots* resembling freckles at first glance but more deeply embedded in the skin An aggregation of these nodules usually can be seen in and round a lupus lesion of any duration *Some*times, however the lupomas are so close set that a confluent infiltration is produced



(a)



(b)

Fig 137—Lupus catarrhalis of nose (a) before treatment (b) after calciferol 100 000 units daily for 8 months and sunlight

which clinically presents as a prominent soft patch of dusky red colour in which individual lupus nodules cannot be distinguished by diascopic examination or the surface may be hard and hypertrophic (Fig 139)

The infiltrative tuberculous process spreads indolently by peripheral enlargement of the primary patch and by its fusion with outlying foci the disease destroying all

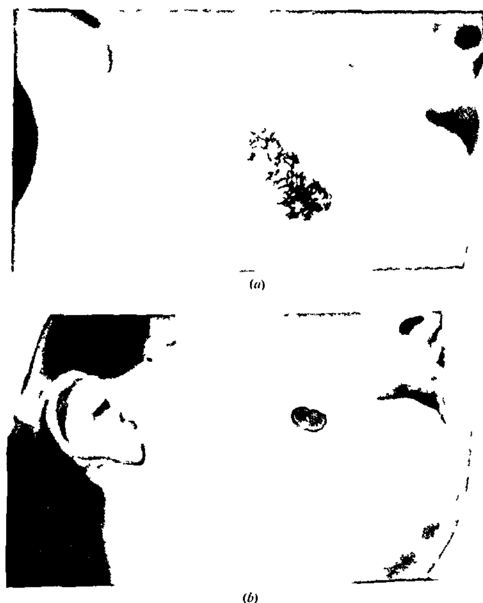


Fig 138 —Early lupus vulgaris (*a*) before treatment (*b*) after calciferol 100 000 units daily for 7 months Complete resolution

the constituents of the skin as it progresses Meanwhile healing by fibrosis is occurring in the older part of the lesion leaving residual lupomas locked up here and there in the scar tissue Characteristically the course of lupus is very slow though the process is more active in childhood and its advance may at any time be accelerated by an intercurrent illness or by exposure to cold

In many cases the skin surface breaks sooner or later into shallow erosive ulcers which often become pyogenically infected so that the lesion may resemble impetigo at first sight (Fig 140) Lymphangitis is also a common complication in ulcerative lupus and accounts for the recurrent phases of congestion and subacute erysipel atoid inflammation which sometimes occur in facial lupus lymphangitis may also produce permanent elephantiasis like thickening for example of the lips or eyelids True erysipelas does sometimes occur due to invasion by streptococci The peculiar tendency of lupus scar tissue to contract is responsible for the distressing deformities such as ectropion or stricture of the mouth or nasal orifices which are so typical of the disease Another formidable complication in lupus of long duration is

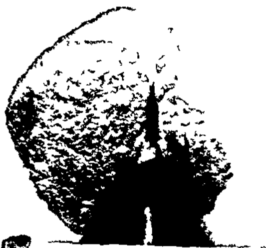


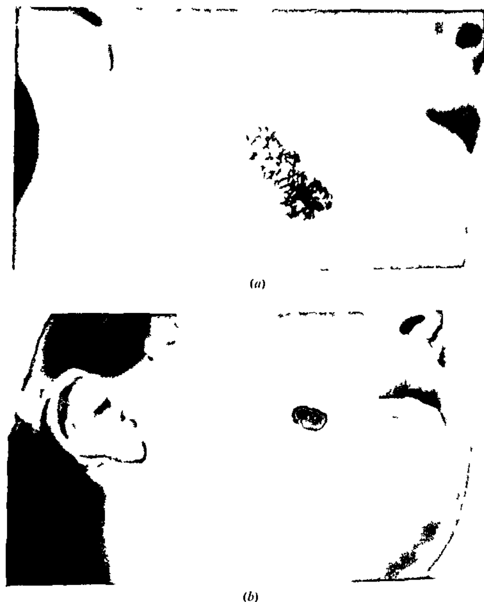
FIG 139—Lupus vulgaris verrucose type



FIG 140—Ulcerative lupus vulgaris with severe destruction of tissues

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of the lungs should be carried out as a routine in every case of cutaneous tuberculosis

Diagnosis

The most important disease to exclude is a tertiary cutaneous syphilide of the tuberculo ulcerative serpiginous type which may strongly resemble lupus (Fig 143) Lupus however usually begins at a much earlier age than tertiary syphilis and except for rapidly ulcerative forms takes years to cause the destruction which



Fig 143 —Lupus vulgaris with ulceration Differential diagnosis had to be made from tertiary syphilis patient under treatment for pulmonary tuberculosis Ulcers healed after calciferol for 6 months 100 000 units daily chest lesions appeared to be no worse for calciferol

syphilis can accomplish in months Lupus can erode cartilage such as that of the tip of the nose but never bone as syphilis may A Wassermann test should be undertaken as a routine in any chronic granulomatous skin disease though the test is not always positive in tertiary syphilis The therapeutic test of anti syphilitic treatment can also be applied cutaneous tertiary syphilides responding dramatically to treatment by means of bismuth arsenicals or the mercuric iodide mixture

Lupus vulgaris may be confused with lupus erythematosus especially as the latter also affects predominantly the nose and central area of the face Indeed chronic fixed lupus erythematosus may closely resemble non ulcerative lupus vulgaris though lupus erythematosus tends to be more symmetrical and to occur in older persons apple jelly nodules are absent and there are characteristic adherent scales and horny plugs in the mouths of the sebaceous follicles

To mistake a flat basal cell carcinoma for lupus vulgaris is a serious error Such a case seen recently by the writer had been misdiagnosed as lupus and the patient had been treated by actinotherapy for many years so that the rodent ulcer had been allowed to progress from a small lesion on the side of the nose over the malar

the development of epithelioma hence any warty or proliferative change occurring in old lupus tissue calls for an immediate biopsy to exclude cancer The injudicious treatment of lupus with radium or x rays may predispose to the eventual appearance of carcinoma (Figs 141 and 142)

Many lupus patients otherwise enjoy good health but the disease may be coexistent with indolent tuberculosis in other organs, especially lymph glands Though pulmonary tuberculosis is uncommon with lupus x ray examination



Fig 141 —Lupus vulgaris x ray scarring adherent to mandible



Fig 142 —Lupus vulgaris x ray scarring epithelioma in scar

in different directions so that the whole area mav be riddled with sinuses fistulae and pockets of pus When healing occurs the scar is usually irregular often adherent in the depth of the tissue and may be honeycombed with fibrous bands or undermined by fistulous tracts

Tuberculous gummas and other varieties of scrofuloderma usually contain Koch s bacilli although in moderate numbers and their tissue causes tuberculosis in guinea pigs inoculated with it Treatment should be on the same lines as for lupus

Acute tuberculous ulcer (tuberculosis cutis orificialis)

As a rule tuberculous ulcer in which Koch s bacilli are usually abundant is observed only in already badly infected adults The lesion is a shallow superficial ulcer with a livid irregular margin and occurs either in the mouth or the perianal area in patients suffering from tuberculosis of the lung larynx or intestine It is due to auto inoculation of a fissure or a breach of the surface with tubercle bacilli from sputum or faeces

Tuberculous ulcer might be confused with chancroid epithelioma or a primary syphilitic chancre The diagnosis however can be established by bacteriological examination of tissue scrapings from the floor or from under the margins of the ulcer

Tuberculous ulcer should be excised when practicable or destroyed with the electrocautery or by chemical cauterization for example with liquid acid nitrate of mercury

CALCIFEROL TREATMENT OF TUBERCULOSIS

Tuberculosis of the skin especially lupus though fortunately not a common disease and seldom a direct cause of death has always been regarded with ample justification as one of the most intractable and discouraging of maladies to deal with

Space will not permit consideration of the many therapeutic methods that have been tried over the years their inability in so many cases to cure or to arrest the progress of the disease is only too well exemplified in the advanced ulcerated and mutilated cases of facial lupus which present such a distressing social and economic problem

Treatment broadly has always aimed at removal of or local destruction of the diseased tissue by such means as surgical excision or curettage or by chemical or electrical cauterization combined with attention to the whole constitutional state of the patient as a tuberculous subject by good feeding sunshine and an open air life

The prognosis particularly in lupus was vastly improved by Finsen s introduction in 1897 of local treatment by concentrated ultra violet light and a further advance was made by combining this with irradiation of the whole body preferably by daily carbon arc baths Excellent results and many complete cures have been obtained by this method especially when treatment has been carried out in institutes or special departments properly staffed and equipped for the work which requires much experience and skill But actinotherapy even under the most

area with final involvement of the orbit The excision of a small piece of tissue for histological examination would have established the diagnosis with certainty in the *beginning and there would have been every* prospect of complete cure by radiotherapy or surgical excision

Tuberculosis verrucosa

Warty tuberculosis which occurs more often in adults is almost always due to *direct inoculation* of the skin with Koch s bacilli and therefore is usually seen on the fingers wrists and backs of the hands For example in open pulmonary tuberculosis the patient may infect himself with his sputum or the nurse may contract the disease from washing infected handkerchiefs Others liable to become infected (anatomical wart or verruca necrogenica) from handling tuber *culous material are post mortem room or dissecting room* attendants and butchers

Verruca necrogenica may evolve fairly rapidly from an initial small painful inflammatory swelling at the site of inoculation into a lesion resembling a common virus wart which has become pyogenically infected The base however of verruca necrogenica is infiltrated and is surrounded by a characteristic purplish red areola *beads of pus which contain Koch s bacillus can be expressed from the surface* Verruca necrogenica though of small dimensions is highly virulent and may disseminate tubercle bacilli *via* the lymphatics to the regional lymph nodes and thence occasionally to distant organs thus it constitutes a serious lesion

More commonly tuberculosis verrucosa occurs as a raised brownish red plaque often oval or annular in shape which extends *slowly circumferentially* while cicatrization is taking place in the centre The patch has an indurated base and in irregular vegetative surface interspersed with small adherent crusts or cribriform ulcers from which pus may be squeezed out

The diagnosis is not usually difficult being based on the site of the lesion its clinical appearances and slow course and the association with *tuberculosis* or history of contact with tuberculous material Positive confirmation can be obtained by histological and bacteriological examination and if necessary by animal inoculation

Tuberculosis verrucosa is usually amenable to early and energetic treatment When possible the lesion should be *completely excised surgically alternatively* thorough scraping under local anaesthesia followed by the application of pure Lysol may suffice to produce cure The subsequent scar, however must be watched as a relapse may occur The treatment of this and other forms of cutaneous tuber culosis with calciferol will be dealt with later

Scrofulodermia (tuberculosis colliquativa)

Under this comprehensive title are included tuberculous infiltrations abscesses and ulcerations of the skin due to extension of the disease from underlying caseating tuberculous foci in lymph glands bones and joints Scrofulodermia which may *coexist with lupus is rarely* seen nowadays The disease begins as an indurated deeply adherent node or swelling which soon presents a purplish or livid surface Softening occurs *either deeply or superficially with the* eventual development of ragged undermined ulcers having a purulent discharge and intercommunicating

in different directions so that the whole area may be riddled with sinuses fistulae and pockets of pus When healing occurs the scar is usually irregular often adherent in the depth of the tissue and may be honeycombed with fibrous bands or undermined by fistulous tracts

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(a)



Fig. 144.—Ulcerated lupus (a) relapsing and spreading in spite of continued sunlight and cod liver oil (b) after calciferol 100 000 units daily for 2 years Plastic operation to relieve stenosis of both nostrils

(b)

favourable conditions is extremely tedious constant attendance for treatment monopolizes the patient s life and many become discouraged by their slow progress or are unable for financial or other reasons to continue for the years that may be necessary Thus until the recent introduction of intensive vitamin D therapy the outlook in cutaneous tuberculosis remained gloomy at best (Fig 144)

Of course cod liver oil has been traditionally regarded as being of benefit in tuberculosis because as one now realizes of its vitamin D content and it is of great interest to recall that as long ago as 1848 Emery a Paris physician reported a high proportion of cures in patients with lupus who were given from 20 to 40 ounces of cod liver oil daily Emery s treatment however was abandoned presumably because few could tolerate such enormous doses It would also seem likely that the good effect of general heliotherapy on lupus is due to vitamin D which is elaborated when the natural skin sterols are exposed to ultra violet rays

In England the treatment of lupus with heavy doses of synthetic vitamin D_2 (calciferol) was initiated in 1943 by Dowling and Prosser Thomas at St Thomas s Hospital they were unaware until after the publication of their first results in 1945 that similar intensive vitamin D therapy had been carried out during World War II by Charpy (1943) in France and had been reported earlier by him in the French literature

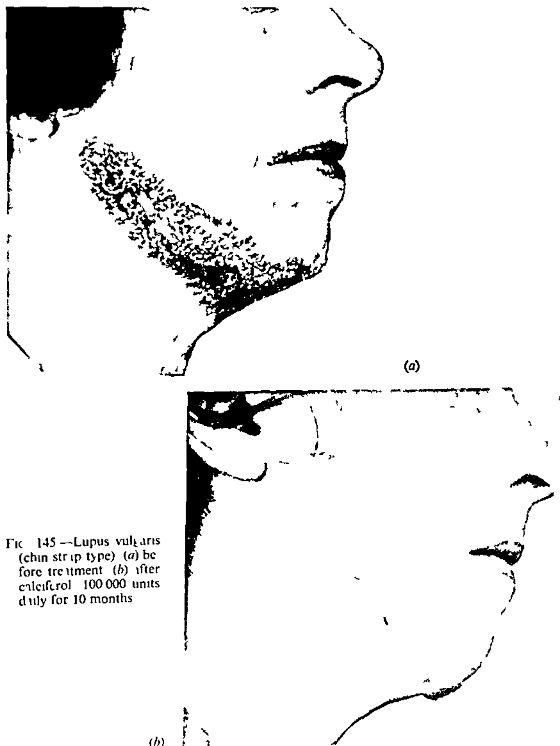
Though too soon yet for final assessment large doses of calciferol appear to be curative in a majority of cases of lupus and will improve others in varying degree in a small proportion of cases the drug is completely ineffective Good response is also obtained in other forms of cutaneous tuberculosis and in lupus of mucous membranes

Calciferol is conveniently given by mouth in the form of tablets oily capsules or in alcoholic solution In England the preparation chiefly used has been Ostelin High Potency tablets each of which contains 50 000 *international units of* calciferol No rigid scheme of dosage is possible for there is much individual variation both in clinical response and in the patient s tolerance to the drug The average daily dosage for adults is 50 000 i u given three times a day this being the highest amount that the patient will tolerate without experiencing nausea or other symptoms Most patients can take the drug comfortably but occasionally it becomes n cessary to reduce the dose to 50 000 i u given twice a day Experience has shown that the latter dose though sometimes adequate is not always so while 50 000 *i u* given once daily appears to be of little use for an adult The usual dosage for children is 50 000 i u twice daily

The period of treatment varies from 3 months to 7 months or longer Some patients have done well with short bursts of treatment lasting for a few weeks followed by *int rvals* in which administration of the drug is discontinued to allow of its excretion It is probable that the most effective dose is somewhat near the limit of tolerance and occasionally may be beyond it

Patients *receiving* heavy dos s of calciferol should be under regular medical observation for the drug is *potentially* toxic and can cause renal damage and also calcification in soft tissues such as *blood* vessels Toxic symptoms include nausea loss of appetite thirst mental *depression or* feeling out of sorts giddiness head ache and frequency of micturition These symptoms and the toxic changes disappear fairly rapidly when the drug is stopped Precautionary measures *such* as

regular testing of urine for albumin and estimations of the serum calcium and blood urea levels must, however, be taken. A rise in the serum calcium is to be expected in most cases though it is not necessarily accompanied by toxic symptoms; should, however, the level exceed 11 milligrams per 100 millilitres (the normal level being 9–11 milligrams) the dose of calciferol should be reduced or the drug withdrawn.



(a)

(b)

FIG. 145.—Lupus vulgaris (chin strip type): (a) before treatment; (b) after calciferol 100 000 units daily for 10 months.

temporarily Other indications of approaching toxicity and for the complete withdrawal of the drug are a rise in the blood urea and a significant increase in the blood sedimentation rate Because of the risk of damaging the kidneys calciferol should be given only with great caution to elderly subjects who have arteriosclerosis or poor renal function It is positively contra indicated in chronic kidney disease with albuminuria The drug sometimes produces an initial focal exacerbation of the tuberculous process and therefore it is unsafe to give large doses in the presence of active pulmonary tuberculosis

It must not be supposed that calciferol has completely eliminated the need for skilled local treatment On the contrary progress in many cases can be accelerated by the addition of Finsen or Kromayer lamp therapy or by local application of selective chemical caustics such as trichloracetic acid or liquid acid nitrate of mercury Nor should calciferol be expected to resolve completely those lupus nodules which are isolated and locked up in old scar tissue which has a poor blood supply In such cases the prolonged administration of the drug may be dangerous as well as useless

Finally it must be emphasized that patients receiving calciferol treatment are still tuberculous subjects and as such need good food extra milk fresh air and rest (Figs 145–147)

THE TUBERCULIDES

Darier suggested the term tuberculide in 1896 for a numb r of apparently very dissimilar eruptions which are closely related in one way or another to tuberculosis For instance tuberculides are frequently coexistent with glandular bony visceral or cutaneous tuberculosis or the patient has a tuberculous history or develops tuberculosis in later life Moreover the skin lesions themselves very often have a typical tuberculous structure and the tuberculin test as a rule is positive But in contrast with true cutaneous tuberculosis Koch s bacilli are rarely found in the tuberculides and guinea pig inoculation is usually negative The tuberculides also differ greatly from cutaneous tuberculosis proper in their clinical course which is relatively benign The lesions which have a tendency to spontaneous cure usually appear in successive crops without disturbance of the general health they tend to be disseminated and symmetrical and often are distributed on the distal part of the limbs

The tuberculides supposedly are allergic cutaneous reactions to the tubercle bacillus or its toxins but it must be admitted that their pathogenesis is not yet settled *nor is their nomenclature* which unfortunately is very confused The following clinical varieties are generally recognized

Lichenoid tuberculides

These eruptions including acne scrofulosorum occur mostly in children or adolescents who are suffering from indolent bony or glandular tuberculosis The rash sometimes appears after an acute infectious fever such as measles The lesions consist of brownish or flesh-coloured punctiform papules often no larger than a pin s head which tend to form groups patches or rings mainly on the trunk Some of the spots have a flat and glistening surface (lichenoid) whereas others are small horny conical excrescences sometimes surmounted by a sluggish

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(a)



(b)

FIG 145 – Lupus vulgaris (chin strap type) (a) before treatment (b) after calciferol 100 000 units daily for 10 months

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(a)



(b)

FIG. 145.—Lupus vulgaris (chin strap type). (a) before treatment. (b) after calciferol 100 000 units daily for 10 months.





FIG 147 —Lupus vulgaris with superficial ulceration (a) before treatment (b) after calciferol 100 000 units daily for 8 months


(a)


(b)

Fig. 146.—Lupus vulgaris (a) before treatment (b) after 6 months calciferol 100 000 units daily

deeply in the corium and hence has a solid somewhat shotty feel After about a week a central vesicle or pustule forms and in due course is transformed into a crust or scab which involutes leaving a depressed pigmented scar The eruption which affects young persons mostly is of symmetrical distribution preferring parts of the body where the circulation is sluggish namely the ears fingers elbows knees and feet Lesions appear in successive crops over a prolonged period In the form called acnitis or acne agminata the face is affected predominantly the lesions consisting of indolent miliary nodules which may suppurate and subsequently heal with scarring (Fig 148)

Papulo necrotic tuberculides are unlikely to be confused with variola or varicella because of their chronicity and the absence of fever or constitutional reaction they differ from acne vulgaris by their distribution and the absence of blackheads

Apart from treatment aimed at correcting the general hygiene and nutrition general heliotherapy or calciferol may be tried except in cases in which active hilar or pulmonary tuberculosis is present Red oxide of mercury ointment is reputed to be one of the most useful local applications

Erythema induratum scrofulosorum (Bazin s disease)

Affecting almost exclusively young women with the chilblain type of circulation Bazin s disease is a chronic hypodermic tuberculide Because of the predisposing circulatory stasis the lesions occur predominantly on the lower part of the legs especially at the back and outer side

The lesions which are usually bilateral begin as deep subcutaneous infiltrations and evolve indolently to form nodules or plaques of varying size having an indurated feel Often the overlying skin which is dusky red or livid breaks down into sluggish and obstinate ulcers which eventually heal leaving depressed scars with pigmented borders Exacerbations occur in cold weather

True Bazin s disease commonly coincides with surgical tuberculosis in some form especially tuberculous adenitis and may be associated with other varieties of tuberculide such as the papulo necrotic type Because however in some cases of clinical Bazin s disease a tuberculous background is undiscoverable it has been contended that identical lesions may result from a primary vascular disorder of a phlebitic or thrombotic nature in the deep-seated veins and be unrelated to tuberculosis

Bazin s disease may be confused with common chilblains or more likely with *erythrocyanosis frigida crurum*—the fixed cold blue patches above the heels in girls But chilblains though sometimes severe are superficial not indurated and rarely ulcerate deeply Syphilitic gummas resemble Bazin s lesions but occur in older persons and are not symmetrical or multiple Erythema nodosum is a relatively acute eruption of tender red nodes on the shins principally which never ulcerate Hypostatic ulcers occur over the malleoli usually in much older people and are associated with obvious varicose veins

In addition to measures to improve the patient s general health treatment should include a trial of som form of occlusive bandage applied from the foot to above the calf which not only counteracts the circulatory stasis but retains heat Full length fleece lined boots or *crepe* bandages should be worn during the winter

pustule or scab The histological structure of the lesions is nearly always typically tuberculous consisting of miliary tubercles with epithelioid cells and giant cells Lichenoid tuberculides may persist for a very long period or may clear up only to recur

In the differential diagnosis it must be remembered that an identical eruption known as a trichophytide, may occur in association with a fungus infection of the skin particularly with the suppurative pseudo carbuncular ringworm of the scalp called kerion *It may also be impossible to distinguish clinically a lichenoid tuber*culide from a follicular lichenoid secondary syphilide which however, would be very unlikely to occur in a child and would be associated with other signs of syphilis and a positive Wassermann test

The treatment of lichenoid tuberculides implies treatment of the underlying cause and the patients must be regarded as tuberculous or potentially tuberculous Good food, cod liver oil and fresh air are therefore indicated, and all cases should be under periodical medical observation



Fig 148 —Acne agminata before treatment Lesions healed after general ultra violet light for 18 months

Papulo necrotic tuberculides

Various clinical forms of papulo necrotic tuberculide occur and have been described under a number of different names from time to time Essentially the lesion is a dusky red elevated papule or small nodule on an erythematous base it arises

The papular variety (disseminated miliary lupoid) consists of smooth or slightly scaly hemispherical elevations of a livid or brown colour which on palpation are felt to be firm and in the skin The lesions tend to form groups mostly on the face shoulders and upper limbs and are of symmetrical distribution

In the nodular and plaque types the lesions are usually few and isolated and occur mainly on the forehead elbows and knees (Fig 149)

Lupus pernio so named because of its resemblance to lupus vulgaris or lupus erythematosus on the one hand and to chilblain on the other is a deeper and more



Fig 149 —Sarcoids of knees

diffuse sarcoid presenting as red or cyanotic infiltrated patches on the nose cheeks ears fingers and toes

A very superficial serpiginous form of sarcoid is also occasionally seen

Sarcoids may persist almost indefinitely or may involute eventually with central *cicatrization and flattening*

Sarcoidosis can cause much difficulty in diagnosis Cutaneous sarcoids may be confused with lupus vulgaris (or sometimes with lupus erythematosus) and with secondary or tertiary syphilides A Wassermann test should exclude syphilis and a negative Mantoux test is almost certain evidence against tuberculosis Biopsy of a skin lesion or lymph node is of great value because the histological appearances in sarcoid are distinctive Radiological examination may reveal an associated sarcoidosis of the lungs bilateral hilar enlargement is common or there may be diffuse miliary infiltration or confluent opacities Fatigue and loss of weight sometimes occur in sarcoidosis but the absence of pyrexia or other signs of toxaemia is

Physiotherapy in the form of massage, radiant heat or galvanic baths is useful In severe cases rest in bed is indicated and the legs should be elevated septic ulcers should be treated with warm compresses of mercury perchloride 1 4000 in 1 per cent saline solution during the day and with aqueous gentian violet 1 per cent and a dry dressing at night In the writer s experience heavy doses of calciferol have proved useless in Bazin s disease

Lupus miliaris disseminatus faciei

Although rare lupus disseminatus faciei is of great interest because, while it resembles lupus vulgaris clinically and evidently is closely related to it its behaviour is more like that of a papulo necrotic tuberculide or of a miliary sarcoid The eruption occurs almost exclusively on the face and has a predilection for the eye lids and margins of the orbits the upper lip and the chin All the lesions usually evolve within a few weeks remain unchanged for about six months and then involute leaving small scars The individual lesion is a small discrete brown elevated nodule which shows typical apple jelly colour on diascopy and is in distinguishable from a nodule of lupus vulgaris Histologically, however in contrast with common lupus central caseous necrosis is often present The tuberculin reaction may or may not be positive

Because of its benign and self limited course lupus disseminatus faciei does not present a therapeutic problem The writer has not found calciferol treatment of any value in hastening resolution

SARCOIDOSIS

Sarcoidosis, like tuberculosis is a general disease with local manifestations which may involve a wide range of structures apart from the skin such as the lungs lymph nodes and spleen Thus it is now recognized that Herrfordt s uveo parotid syndrome is a manifestation of sarcoidosis as are the peculiar punched out cyst like areas in the phalanges which Jungling named osteitis tuberculosa multiplex cystoides because of their supposed tuberculous origin

Sarcoidosis is not related in any way to sarcoma as unfortunately the name implies The aetiology is still in dispute but some authorities class sarcoidosis among the tuberculides believing the disease to be due to a particular stage in the life cycle of the tubercle bacillus Others regard sarcoidosis as a peculiar reaction of reticulo endothelial tissue with formation of pseudo tubercles under the influence of an unknown virus

Sarcoid lesions are circumscribed cellular infiltrations and the essential histo logical changes are the same at all sites namely tubercles of epithelioid cells arranged concentrically caseous necrosis is absent and tubercle bacilli cannot be found by staining culture or animal inoculation Moreover the tuberculin re action is so rarely obtained in sarcoidosis that a negative Mantoux test is regarded as a point in favour of that diagnosis

Cutaneous sarcoids of Boeck

Sarcoids occur in the skin as papules nodules or plaques which are usually multiple, painless and of slow development They are benign in the sense that they do not soften or ulcerate and do not notably affect the general health

CHAPTER 20

FUNGUS INFECTIONS OF THE SKIN

I MUENDE

CLASSIFICATION

THE TERM dermatophyte is now widely accepted and employed in place of the older and for many more confusing word ringworm to denote fungus capable of producing affections of the skin and of its appendages the hair and nails

The study of mycotic diseases of the skin has recently passed its first century beginning with the discoveries of Remak Schoenlein and Gruby and reaching a very important milestone in 1910 with the publication of Sabouraud s comprehensive and detailed work *Les Teignes* now a classic in medical mycological literature It is certainly to Sabouraud that we owe our greatest debt for among his many contributions he has given us a classification of fungi which despite its recognized botanical deficiencies has proved the most acceptable and practicable and he has also given us a medium the main principles of which are still adopted by most workers for the cultivation of the dermatophytes and which has proved very valuable for differentiating species by their macroscopical appearances

Sabouraud s classification divided the pathogenic skin fungi into the following main genera—microsporon trichophyton and achorion to which were later added epidermophyton and endodermophyton These genera and the sub groups *T endothrix T ecto endothrix T ectothrix microides* and *T ectothrix megaspores* are by no means botanical but rely for their classification mainly on their mode of distribution in or around the affected hair and on their morphology Thus the microsporon produces an irregularly arranged mosaic of small spores around the hair the trichophyton produces parallel chains of spores entirely within (*T endothrix*) within and without (*T endo ectothrix*) or without the hair (*T ectothrix*) Owing to an appreciable variation in size of the spores of some species of ectothrix that sub genus was divided into further groups *T ectothrix megaspores* and *T ectothrix microides*

The achorion a genus whose characteristics are not so well defined was designed to include fungi capable of producing peculiar cup like or shield like crusts (scutula) around individual hairs Unfortunately species of achorion do not always develop scutula on their various hosts As a typical example we may quote *A gypseum* which though producing scutula in cattle gives rise in man to an infection of the hair similar to that of the trichophyton and as its microscopical characteristics suggest that it should belong to the group of microsporon it is now more correctly named *M gypseum* It was in an attempt to remove the anomalies of the genus achorion and at the same time to simplify and try to bring the grouping of the dermatophytes nearer to an acceptable botanical classification that

usually in striking contrast with the alarming radiological findings, in fact the lack of symptoms in sarcoidosis may be an important diagnostic clue

Treatment

In a small number of cases so far reported calciferol has given encouraging results, and the drug certainly should be tried in the same dosage as for lupus In a patient with lupus pernio recently under the writer s care there has been a striking regression of lesions after treatment with calciferol Otherwise sarcoidosis should be treated on general lines, possibly with the addition of arsenic or gold injections

The writer is much indebted to Dr R Mason Bolam for kindly lending Figs 134 to 148 here *reproduced all of which are of cases in Dr Bolam s care*

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both the microsporon (Fig 150) and *T ectothrix* (Fig 151) grow outside the hair but whereas the conidia maintain a linear arrangement in trichophyton infections no such conformation can be recognized with the microspora when they appear

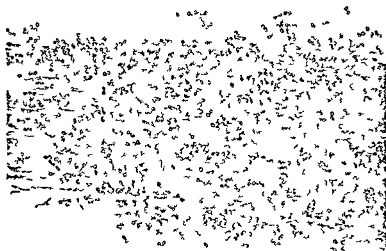


FIG 150—*Microsporon* infected hair showing mosaic of spores around the hair and mycelial elements within the hair (*potash preparation*)



FIG 151—*T ectothrix* infected hair showing chains of spores outside and inside the hair (potash preparation)

Webb and Muende suggested that criteria depend on certain microscopical characteristics It was found that the microsporon trichophyton and epidermophyton produced, on artificial media small unicellular spores (microconidia) and large peculiar multilocular spores (macroconidia fuseaux or spindles) which were constant for each group and that using these factors one could place the several species of achorion into the category of either microsporon or trichophyton *Microspora* as a general rule produce elongated microconidia and fusiform macroconidia with thick walls and pointed extremities the trichophyta produce round or pyriform microconidia and long cylindrical macroconidia with hemispherical free ends and the epidermophyta rarely produce microconidia and their macroconidia are relatively short and pear shaped the thin end being continuous with the hypha

The great majority of the dermatophytes are conveyed to man from infected animals but some those of the *T endothrix* group and the species *M audouini* have so far not been found on any animal host Furthermore, attempts to transfer them to experimental animals have always failed There is too a relatively marked degree of host specialization for, not only are the above mentioned fungi specific to man but the common dermatophyte of the cat, *M canis* (synonym *M felineum*) cannot be transmitted to the cow nor has the dermatophyte of cattle *T mentagrophytes* (synonym *T gypseum*) been found on cats The human species and particularly *M audouini*, has developed a very high degree of host specialization producing practically no tissue reaction and if it were not for a biochemical change apparently due to an endocrine factor, the fungus would probably grow indefinitely on human hair

It is common practice to study the dermatomycoses or diseases produced by the dermatophytes under headings dependent on the tissue or part of the body involved, a procedure which will be adopted here dividing them into the following groups

(a) Tinea tonsurans with its sub group tinea barbae
(b) Tinea circinata with its sub groups tinea cruris and tinea pedis
(c) Tinea unguium

TINEA TONSURANS AND TINEA BARBAE

Fungus infection of hairy parts of the body originates from the growth of hyphae on the superficial part of the stratum corneum which on reaching the hair follicles grow downwards and at about the junction of the middle and lower thirds pass inwards to invade the hair shaft After insinuating itself beneath the cuticle the mycelium penetrates the hair and grows downward to within a short distance of the hair bulb where it produces a vertically arranged fringe These terminal mycelial threads were first described by Adamson and on the Continent have been referred to as the fringe of Adamson Having established itself in the hair shaft, the fungus no longer relies on its primary source of infection the stratum corneum for its nutriment Mycelial elements then grow upwards from the fringe branch dichotomously and break up into conidia and it is the position and arrangement of the latter which determines into which group the fungus is to be placed Thus

both the microsporon (Fig 150) and *T ectothrix* (Fig 151) grow outside the hair but whereas the conidia maintain a linear arrangement in trichophyton infections no such conformation can be recognized with the microspora when they appear



Fig 150—Microsporon infected hair showing mosaic of spores around the hair and mycelial elements within the hair (potash preparation)



Fig 151 – *T ectothrix* infected hair showing chains of spores outside and inside the hair (potash preparation)

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considered by some to be the result of fermentation of the hair substance produced by the fungus

There is a notable exception to the rule that the fungus originally parasitic on the stratum corneum finally makes the hair its host and that is in the case of some species of favus Here the fungus may grow on the epidermis around the hair forming aerial hyphae not unlike a small culture and give rise to a yellowish lesion known as a cutulum besides growing within the hair shaft (Fig 154)



Fig 154 —Boy s scalp infected with favus showing typical crusted lesions composed primarily of scutula about ½ inch in diameter many of which have become confluent

The presence of mycelial elements both within and without the hair is responsible for fracturing the hair and the length of the infected stump above the hair surface is almost a characteristic of the grouping of the species For example the fracture usually takes place at the orifice of the follicle in endothrix infections at a length of ⅛–¼ inch with the microspora and at varying lengths and frequently not at all with favus infections (*T schoenleinii* synonym *A schoenleinii*) The stumps in animal trichophyton infections are generally short but the hairs usually fall out as a result of the intensive local inflammatory reaction (the kerion) to which this group gives rise

Microsporon infections

If we were to examine the scalp of a child infected with *M audouini* we should see one or several discoid areas in which the hairs were lustreless and protruding

as a closely packed mosaic The mycelium of the *T endothrix* (Fig 152) and achorion (Fig 153) grows entirely within the hair, the former as filaments of uniform width frequently dividing by transverse septa into chains of conidia The

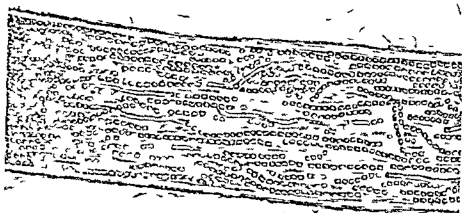


Fig 152—*T endothrix* infected hair showing chains of spores and mycelial elements confined to the interior of the hair (potash preparation)

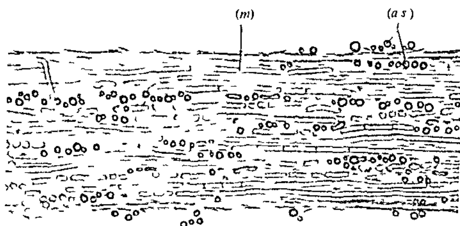


Fig 153—*A schoenleinii* showing mycelium arranged longitudinally (*m*) and transversely within the hair and the typical air spaces (*a s*) (potash specimen of hair)

mycelium of the achorion however is usually unequal in width and frequently sends off branches which run transversely for a short distance breaking up into very short irregular lengths referred to as *tarses faviques* Another characteristic of the favus infected hair is the presence of spherical spaces of varying size

only give rise to a localized erythema followed by a varying degree of scaling the *T ectothrix* produces a vigorous reaction in the corium this reaction is manifested histologically by a marked capillary dilatation oedema of the corium and a dense infiltration with polymorphonuclear leucocytes lymphoid cells and numerous plasma cells The microspora usually immigrate into the epidermis and give rise to perifollicular pustules This discoid raised oedematous lesion beset with small pustules and in which the hairs are broken or tend to come out on slight traction is recognized clinically as the kerion (Figs 155 and 156) Its nature is frequently



FIG 156 —*T ectothrix* of the nape of the neck and right wrist showing a small group of pustules and a large confluent patch (kerion) on the wrist

mistaken owing to the oedema and presence of pus for a coccal abscess of the skin Hairs infected by *T ectothrix* fluoresce very feebly and at times not at all making the use of Wood s light in the examination of epidemics from such a source of infection relatively valueless and one should therefore always examine suspected hairs microscopically

The *T endothrix* fungus usually does not invade all the hairs of the infected area but those involved almost invariably break off at the level of the scalp and the dark peripheral extremity of the hair is characteristic of the affection known as black dot ringworm On e again Wood s light is of no assistance in diagnosis and one must resort to extracting a short stump—this is best done with the aid of a comedone expressor— and examining the hair microscopically

Treatment of fungus infections of the hair

Attempts to treat tinea tonsurans and tinea barbae by ordinary fungicides have for the greater part failed owing to the inability of most vehicles to carry such substances down the hair follicles The use of non specific methods such as the inunction of substances capable of producing a local inflammatory reaction resulting in a loosening of the infected hairs was probably the practice of the Mahon brothers during the large epidemic in Paris at the beginning of the nineteenth century Their methods however were kept secret and numerous attempts have since

from a slightly scaly surface and on stroking the hairs with a light instrument it would be observed that the infected hairs had lost a considerable amount of their elasticity and did not straighten again as do healthy hairs Animal infections for example those due to *M canis* produce similar lesions, but the areas involved are usually more numerous and not infrequently exhibit a more inflammatory base The diagnosis of tinea tonsurans can be verified readily by a microscopical examination of hairs, soaked and warmed slightly in a 10 per cent solution of potassium hydroxide which reveals the spores arranged as an irregular mosaic about the hairs Another useful method, particularly for examining large numbers of suspected cases is the examination of the heads under Wood s light The latter is the illumination afforded by a source of ultra violet light screened by Wood s nickel oxide filter which permits only a waveband in the region of 3,660 A U to pass through Microsporon hairs examined in this light fluoresce brightly emitting a brilliant bluish green colour Care must be taken not to confuse this with the fluorescence produced by sebum and certain extraneous oils Infected cats and dogs can be examined in the same way and a careful search should be made of the head, *and particularly free borders of the ears and also the legs and perianal region*

Trichophyton infections

*The T ectothrix group of fungi are all communicated from animals the com*monest sources being calves and horses The mode of infection of the scalp hair is,



Fig 155—Ringworm infection of the beard showing the presence of grouped pustules which have become confluent in a lesion over the chin

at its onset, the same as that of the microsporon but finally the mycelium growing upwards and outside the hair divides to give rise to chains of spores a characteristic common to all species of the large trichophyton group A very striking difference is found in the reaction of the scalp itself for whereas the microspora at the most

In children scaly rings with only a minimal degree of inflammation appearing on the forehead or upper half of the trunk should direct one s attention to the scalp for lesions of tinea tonsurans due to *M audouini* Inflamed rings occasionally com pos d of minute vesicles and not infrequently concentric are almost pathogno monic of cat ringworm The rings are usually smaller than those produced by the human microsporon but are much more profuse and need not necessarily be asso ciated with scalp lesions *T rubrum* (synonym *T purpureum*) commonly gives rise

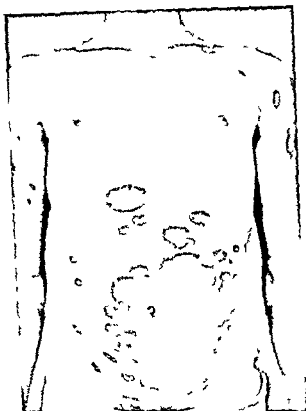


Fig 157 —*T rubrum* infection of the trunk and limbs Note the broad inflamed margin and the persistence in the centres of the lesions of scattered follicular papules

to very inflamed rings with broad margins the centres being relatively clear except for a few scattered papules due to invasion of the lanugo follicles (Fig 157) Early lesions of cattle ringworm are usually manifested by a small group of inflamed papules slightly larger in the centre than at the periphery These spread to produce a raised disc like patch an inch or two in diameter with small follicular pustules at which stage the infection is known as a kerion (Figs 155 and 156) Favus may give rise to yellow crusted lesions composed of solitary or confluent scutula or to scaly inflamed rings not unlike those produced by human trichophyta Now whereas

been made with irritating oils such as croton oil, but the technique, in the case of *M audouini* infection, has usually proved tedious and painful and the result frequently incomplete Cat ringworm however, frequently responds to such treatment but the substances now employed are preferably chrysarobin or its synthetic analogues The fact that animal microsporon infections usually respond to such simple treatment should encourage one to conduct careful cultural examinations of infected hairs before resorting to the commoner techniques of x ray and thallium therapy

Recently Brain Haber and Crow have claimed success with phenylmercuric nitrate in a Carbowax and Crill base not only in cases of microsporon infection of animal origin but also in *M audouini* infections which so far have always resisted local medicaments

When it was found accidentally that exposure of the scalp to x ray irradiations was *frequently followed by spontaneous hair fall, and that the time interval between* exposure of the scalp and hair fall depended on the quality and quantity of the irradiation this interesting phenomenon was carefully investigated and as a result the use of x ray irradiation as a means of depilating the scalp was evolved It is primarily to Sabouraud Adamson and Kienbock that we are indebted for both the dosage and method of irradiating the scalp and for the warning to measure the dose accurately for fear of producing permanent scarring but many other workers during the last three decades have made modifications which have materially reduced the incidence of partially scarred heads that resulted from earlier irradiations Hair fall should be encouraged by manual epilation after the fourteenth day and in order to prevent reinfection it is advisable to paint the scalp daily with a suitable fungicide such as a weak tincture of iodine

Another therapeutic measure employed very little in Great Britain but used extensively abroad particularly in countries where the incidence of scalp ringworm is high and x ray equipment is inadequate to meet the demands is the administration of thallium acetate It was noticed that patients given thallium acetate for the treatment of phthisis frequently lost their hair except for a narrow anterior fringe Experiments were then begun with the inunction into the scalp of ointments containing varying quantities of thallium but it was soon realized that the hair fall which arose from this procedure was *due to the systemic absorption of the drug* and that when it was given too freely it occasionally resulted in severe nervous disturbances and at times death *It was finally ascertained that the correct dose for temporary hair fall was 8 5 milligrams per kilogram of body weight but that it was prudent to diminish this to 8 0 or even 7 5 milligrams in children approaching* puberty Besides being toxic in doses slightly in excess of that required to produce epilation thallium appears to stimulate hair regrowth and unless the hair is assisted to fall—this can be done with suitable adhesive strappings—and the surface of the scalp adequately disinfected the newly growing hair may become reinfected from residual foci of infected follicles

TINEA CIRCINATA

All species of fungi are capable of producing lesions on the glabrous skin some giving rise to eruptions sufficiently characteristic to suggest the source of origin

In children scaly rings with only a minimal degree of inflammation appearing on the forehead or upper half of the trunk should direct one s attention to the scalp for lesions of tinea tonsurans due to *M audouini* Inflamed rings occasionally com pos d of minute vesicles and not infrequently concentric are almost pathogno monic of cat ringworm The rings are usually smaller than those produced by the human microsporon but are much more profuse and need not necessarily be asso ciated with scalp lesions *T rubrum* (synonym *T purpureum*) commonly gives rise

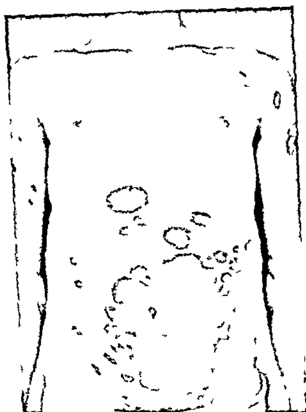


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the fungi which we have just discussed may invade any part of the body some such as *E floccosum* and *T interdigitale* prefer the body folds (Fig 158) When these fungi grow in the groins a favourite site for the development they produce scaly patches with well demarcated convex or festooned margins characteristic of the affection known as dhobie itch or *tinea cruris* *The infection* may spread to the axillae and natal cleft and occasionally to the umbilicus



FIG 158 —Tinea cruris due to *T interdigitale* Note the inflamed margins of the circinate lesions and their tendency to become confluent in the groins

and is commonly associated with or preceded by an infection of the feet Lesions produced by the epidermophyton can usually be distinguished from those due to the trichophyton by the fact that the former produces less inflam *mation tending to give rise to scaly patches whereas the latter gives rise* to a varying degree of vesiculation at the margin with some resolution in the central or older parts of the patches Furthermore the trichophyton being the more virulent of the two spreads more rapidly Another fungus having a predilection for the groins and axillae is *Nocardia minutissima* (synonym *M minutissimum*) *This fungus is responsible for the affection* known as erythrasma which is char acterized by dull brick red and slightly scaly patches with well defined margins and no appreciable *inflammatory reaction*

Monilia too prefer moist warm body folds such as the natal cleft groins and submammary folds producing areas of white sodden skin Another relatively common site is the web between the second and third fingers (Fig 159) where the affection has acquired the descriptive though lengthy title of erosio interdigitalis blastomycetica

Malassezia furfur (synonym *Microsporon furfur*) is a very weak pathogen and is responsible for the affection known as pityriasis versicolor This disease is manifested by the development of small patches of a pale *cafe au lait* colour and which on slight scarification produce a fine branny scaling These patches usually merge together particularly in the midline of the chest and back to form large plaques

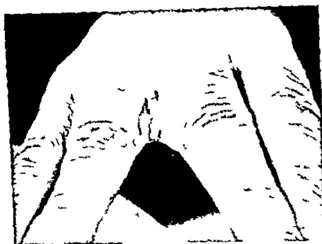


Fig 159 —Erosio interdigitalis showing the characteristic white and eroded patch between the second and third fingers

Many other skin diseases are occasionally erroneously diagnosed as ringworm infections Among them there are (a) pityriasis rosea in which the herald patch is confused with tinea circinata and the widespread secondary eruption with a dissemination of the infection (b) psoriasis and seborrhoeic dermatitis which particularly when the lesions develop in the groins or natal cleft are frequently mistaken for tinea cruris although the error can readily be avoided by a microscopical examination of scrapings and (c) sweat intertrigos—these usually produce red glazed and at times moist patches conforming roughly in shape to the areas of contact of the adjacent surfaces

Treatment of fungus infections of the glabrous skin

The ideal fungicide is yet to be discovered for most preparations in use today are either poor or non specific fungistatics or if active tend to produce a dermatitis medicamentosa in a fair percentage of cases One of the oldest preparations employed is weak tincture of iodine but although this is efficient in most cases many patients develop a heightened sensitivity with a dermatitis which can prove more discomforting than the infection itself Whitfield s ointment acts mainly by virtue of the keratolytic action of salicylic acid aided by the poor fungicidal property of benzoic acid Castellani s paint is of particular value for not only is it a relatively good fungicide but it also acts by desiccating the lesions causing them finally to desquamate above all it very rarely if ever produces a dermatitis Its

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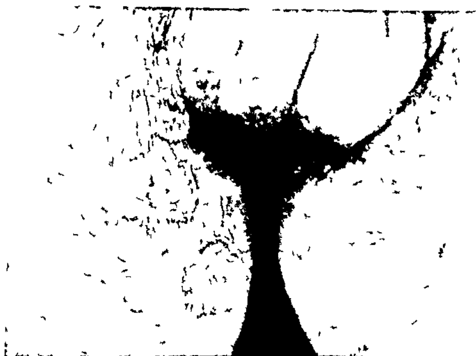


FIG 158 —Tinea cruris due to *T interdigitale* Note the inflamed margins of the circinate lesions and their tendency to become confluent in the groins

and is commonly associated with or preceded by an infection of the feet Lesions produced by the epidermophyton can usually be distinguished from those due to the trichophyton by the fact that the former produces less inflammation tending to give rise to scaly patches whereas the latter gives rise to a varying degree of vesiculation at the margin with some resolution in the central or older parts of the patches Furthermore the trichophyton being the more virulent of the two spreads more rapidly Another fungus having a predilection for the groins and axillae is *Nocardia minutissima* (synonym *M minutissimum*) This fungus is responsible for the affection known as erythrasma which is characterized by dull brick red and slightly scaly patches with well defined margins and no appreciable inflammatory reaction

Moniliae too prefer moist warm body folds such as the natal cleft groins and submammary folds producing areas of white sodden skin Another relatively common site is the web between the second and third fingers (Fig 159) where the affection has acquired the descriptive though lengthy title of erosio interdigitalis blastomycetica

Malassezia furfur (synonym *Microsporon furfur*) is a very weak pathogen and is responsible for the affection known as pityriasis versicolor This disease is manifested by the development of small patches of a pale *cafe au lait* colour and which on slight scarification produce a fine branny scaling These patches usually merge together particularly in the midline of the chest and back to form large plaques

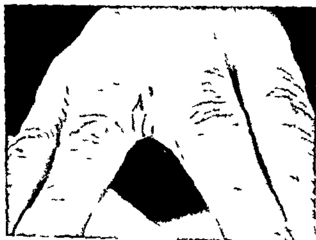


FIG 159—Erosio interdigitalis showing the characteristic white and eroded patch between the second and third fingers

Many other skin diseases are occasionally erroneously diagnosed as ringworm infections Among them there are (a) pityriasis rosea in which the herald patch is confused with tinea circinata and the widespread secondary eruption with a dissemination of the infection (b) psoriasis and seborrhoeic dermatitis which particularly when the lesions develop in the groins or natal cleft are frequently mistaken for tinea cruris although the error can readily be avoided by a microscopical examination of scrapings and (c) sweat intertrigos—these usually produce red glazed and at times moist patches conforming roughly in shape to the areas of contact of the adjacent surfaces

Treatment of fungus infections of the glabrous skin

The ideal fungicide is yet to be discovered for most preparations in use today are either poor or non specific fungistatics or if active tend to produce a dermatitis medicamentosa in a fair percentage of cases One of the oldest preparations employed is weak tincture of iodine but although this is efficient in most cases many patients develop a heightened sensitivity with a dermatitis which can prove more discomforting than the infection itself Whitfield s ointment acts mainly by virtue of the keratolytic action of salicylic acid aided by the poor fungicidal property of benzoic acid Castellani s paint is of particular value for not only is it a relatively good fungicide but it also acts by desiccating the lesions causing them finally to desquamate above all it very rarely if ever produces a dermatitis Its

main disadvantage however is its penetrating colour which may prove very difficult to remove from garments stained by it Claims have been made for proprionic acid and more recently for undecylenic acid and its salts, but the results have in the author s experience proved very disappointing Tinea versicolor responds quite well to swabbing the parts thoroughly with a saturated aqueous solution of hyposulphite of soda or to the application of an ointment containing 2 per cent each of precipitated sulphur and salicylic acid *Monilial infections react* satisfactorily to 1 per cent crystal violet in 30 per cent spirit though occasionally, and particularly in perianal and vulvar lesions it may give rise to a troublesome and very irritable rash characterized by pin head sized follicular erosions

TINEA PEDIS

The fungi commonly responsible for infection of the feet are *E floccosum* and *T mentagrophytes* (synonym Kaufmann Wolf fungus) The former usually produces scaly eruptions and has a predilection for the toe interspaces frequently beginning between the small and adjacent toes from which it spreads to adjacent toe spaces and then to the dorsal and, less frequently the plantar surfaces of the feet (Fig 160) The trichophyton however, produces a more vigorous local inflammatory reaction and gives rise to a vesicular or bullous eruption usually on the inner half of the



FIG 160 —Tinea pedis due to *T interdigitale* A large blister on the side of the foot has been removed to demonstrate the depth of the infection in this area Note the well defined margin in the region of the ankle

sole It should be borne in mind however that not every scaly affection between the toes or vesicular eruption of the soles is of mycotic origin Interdigital desquamation is not uncommon in the absence of fungus infection and pityriasic lesions on the dorsa of the toes are frequently of exogenous or traumatic origin Vesicular eruptions of the soles may be a manifestation of pustular psoriasis or of other non infective vesicular eruptions and failure of such affections to respond to anti mycotic treatment can frequently be attributed to mistaken

diagnoses Moist white patches between and beneath the toes is not an uncommon manifestation of monilial infection and is occasionally encountered in diabetics

Treatment

Having established the diagnosis of tinea pedis the most effective treatment is the application of Castellani s paint but care should be taken to prevent reinfection by advising the patient to wear cotton socks sterilized by boiling and changed daily and if necessary to discard infected slippers Monilial infections of the feet can be treated with gentian violet and occasionally more simply by bathing the feet in permanganate of potash (1 8 000) for 10 minutes twice daily and exposing the parts to the air to encourage desiccation

TINEA UNGUIUM

Being composed almost solely of keratin the nail plate is an excellent soil for the growth of fungus but fortunately probably owing to its very dense nature the incidence of ringworm infection of the nail plate is not particularly high The fungus appears first to gain a foothold in the nail plate at its free margin near one of the lateral walls It then grows along the nail b d and whilst doing so also in vades the nail itself the infection manifesting itself slowly by a discoloration of the nail As more of the nail substance is involved the plate crumbles though it frequently retains a thin superficial veneer of normal nail substance The rate of the infective process is slow and frequently most of the nails are ultimately involved Infection of the adjacent skin a feature which should aid diagnosis is very common but it may be confined to the nails only

Differential diagnosis

The affection with which tinea unguium is most commonly confused is psoriasis of the nails but the diagnosis can easily b confirmed by an examination of scrap ings or parings treated with 30 per cent potash In view of the dense nature of the tissue it is advisable if the fungus is not demonstrated in the first specimen to allow the material to soak in the solution for several hours or even overnight Cases of primary monilial infections of the nail plate have been described but it is the opinion of the writer that such an infection never occurs without the exist ence of a previous onychia and that it may occasionally be a secondary invader of a nail already involved by ringworm fungus

Treatment

The treatment of onychomycosis is difficult and disappointing Local measures have been employed but the dense nature of the tissue precludes the possibility of any fungicide penetrating the substance with any degree of success Alkalis have been used with a view to softening the nail plate but they should b employed with the greatest caution for fear of damaging the surrounding tissue In early cases an attempt may be made to remove the diseased tissue with a few millimetres of what may appear to b normal nail followed by the application of a fungicide to the nail b d As promising as this technique may appear to be reinfection usually takes place probably as a result of the presence of mycelial elements penetrating much farther afield Another measure is the complete avulsion of the nail plate

main disadvantage however, is its penetrating colour which may prove very difficult to remove from garments stained by it Claims have been made for proprionic acid and more recently for undecylenic acid and its salts but the results have in the author s experience proved very disappointing Tinea versicolor responds quite well to swabbing the parts thoroughly with a saturated aqueous solution of hyposulphite of soda or to the application of an ointment containing 2 per cent each of precipitated sulphur and salicylic acid Monilial infections react satisfactorily to 1 per cent crystal violet in 30 per cent spirit, though occasionally, and particularly in perianal and vulvar lesions it may give rise to a troublesome and very irritable rash characterized by pin head sized follicular erosions

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trichophyton infections and this rash has been referred to as lichen trichophyticus Less frequent forms are erythema multiforme erythema nodosum and very rarely pityriasis rosea like mycides There appears to be much support for the view that these mycides are due to sensitization to a fungus extract For not only are such

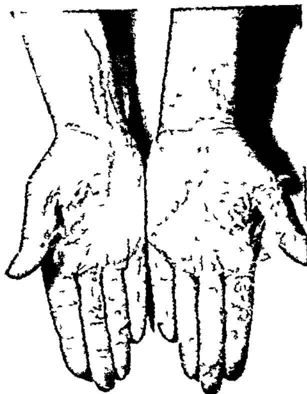


Fig 161 —Post scarlatiniform mycide of the hands secondary to tinea pedis

patients found to be sensitive to high dilutions (1 1 000) of such an extract (trichophytin) but Bruno Bloch actually produced a lichenoid trichophytide by injecting the extract intravenously into a patient who had recently been cured of an infection

If the diagnosis is correct the mycide should undergo resolution when once the infection has been cured and any symptom resulting from its presence should be treated with simple soothing lotions and not with fungicides Attempts to treat the mycide by desensitizing the patient to trichophytin is as bad in theory as it is useless in practice

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but even this is frequently followed by relapses In the case of toe nails one may have to resort to excision of the nail and matrix, a procedure which of course should not be undertaken in the case of finger nails

PARONYCHIA

Ringworm fungi can very rarely produce an infection in the region of the posterior nail fold giving rise to a transverse bulla referred to as a tourniole from the walls and contents of which fungus elements can be recovered More commonly a bolstering in the region of the nail fold is evidence of an infection of the fold itself by yeast like organisms and the condition is prevalent chiefly among pastrycooks barmaids and nowadays housewives It can be attributed to frequent immersion of the hands in malted liquors soiled dish water, or dough In the first place the cuticle becomes dissolved exposing the posterior nail fold which permits the entry of fluid containing carbohydrates which is an excellent medium for the growth of yeast like organisms The bolster like swelling is of an inflammatory nature and indicates oedema but not necessarily the presence of pus the latter being found only in small quantities in the fold itself In chronic cases the inflammation affects nail growth with the production of transverse grooves and other irregularities in the plate Treatment should be directed to disinfecting the nail fold and a useful measure is the insertion by means of a flat bladed wooden applicator of a drop or two of half strength eusol twice daily In no circumstances should the nail be avulsed for this if anything would open up the fold still further

MYCIDES OR ALLERGIC ERUPTIONS ASSOCIATED WITH FUNGUS INFECTIONS

Since Jadassohn first drew our attention about 40 years ago to the significance of a symmetrical lichenoid eruption developing in a patient with a deep seated trichophyton infection it has been generally recognized that fungus infections may, after producing an allergic state give rise to specific skin eruptions These rashes first referred to as trichophytides are now named mycides for they may develop as a result of sensitivity not only to the trichophyton but also to the microsporon Generally speaking the more virulent the fungus the more liable it is to set up a local inflammatory reaction and to give rise as a result of the skin becoming sensitive to a soluble product of the fungus to allergic skin eruptions Thus these mycides are found more commonly in cases of trichophyton infections less frequently in association with epidermophyton infections and rarely in microsporon infections

One of the commonest mycides in Great Britain is a symmetrical vesicular eruption involving the lateral aspects of the fingers and of the thenar and hypothenar eminences an eruption indistinguishable from the classical cheiropompholyx The eruption usually appears soon after the primary lesion (which is either a kerion or a vesiculo bullous tinea pedis) reaches its height and disappears spontaneously as the infection is eradicated Occasionally the vesicles are pin point in size and the eruption is followed rapidly by a desquamation of the skin of the palm and fingers a reaction referred to as a post scarlatiniform mycide (Fig 161) Less commonly a minute lichenoid eruption develops on the trunk in association with animal

lesions are restricted to the scalp It is to be hoped that such cultures will become routine measures for the matter is not one of purely academic interest When the scalp has been infected with *M felineum* the tendency to produce an erythema more easily enables efficient treatment to be attained by the use of *kerionizing* that is irritating ointments and radiotherapy thus becomes unnecessary After

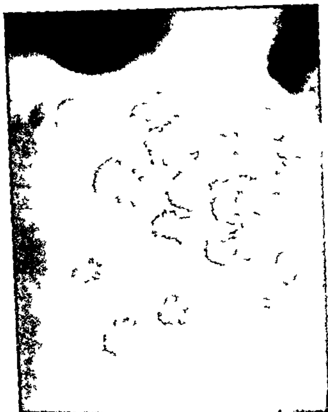


FIG 162 —Tinea circinata caused by *M canis*

careful shaving of the whole scalp such an application can be used twice daily and will produce cure in about 3 months This is the same time as is required for the radiotherapeutic course with its subsequent weeks of observation Excellent ointments which may be used are 10 per cent of salicylic acid in mercuric nitrate ointment or equal parts of soft paraffin and sodium chloride or simple mercury ointment

This relative simplification of treatment is but one point resulting from more exact diagnosis for it is obvious that relapses can occur if an unsuspected carrier is allowed to remain as the patient s companion It is true that this fungus can be passed from child to child but it can also be passed from cat to dog and from cat or dog to child The disease is actually more common in cats than in dogs and is

CHAPTER 21

ANIMAL DISEASES TRANSMISSIBLE TO MAN

SYDNEY THOMSON

INTRODUCTION

THE IMPORTANCE of this interesting subject is gradually acquiring more recognition in urban areas Some of the more unusual observations have been known to farmers for many years and they have used their own time honoured remedies It is only during the last thirty years that efforts have been made to teach animal dermatology more systematically This change, together with the very recent increased interest in mycology, has led to renewed study of the subject Among the actual infecting agents there are fungi cocci viruses and parasites but the range also includes the effects of unusual infestations and bites as well as sensitization phenomena The following diseases have not been arranged scientifically but are taken in their order of incidence and importance Ringworm must therefore take precedence both because of its frequency and because of its great nuisance value in the social and educational fields

CAT RINGWORM

This name for infection with the *Microsporon felineum* is somewhat misleading in that the same fungus can infect dogs and human beings with equal facility In fact the name *M canis* has real precedence in this matter, *M canis* is known as *M lanosum* in America Since the disease is more common in cats than in dogs however the use of this particular name is useful in reminding us of that fact as well as drawing attention to a possible source of infection The Mycology Subcommittee of the Medical Research Council has recently decided that the name *M canis* has precedence and should hereafter be the sole name by which reference to this fungus should be made

When the disease affects the scalp there is presented the usual picture seen in tinea capitis of childhood There are the same broken and twisted stumps and the same slight scaling and centrifugal spread as are seen in lesions caused by the microsporon which infects human subjects *M audouini* Only very rarely does it excite some local erythema Fortunately in many such patients lesions of the glabrous skin are present, particularly where infected material has dropped upon the shoulders and the upper part of the trunk In these cases the skin presents a well defined ring of vesicles on a pinkish red background (Fig 162) The rings vary in size but often attain the diameter of a shilling or even that of a florin and are in striking contrast to the small pale and ill defined rings seen when *M audouini* has attacked the skin Moreover these latter rings are often incomplete and it is most difficult to see any vesicular edge at all This difference allows a clinical diagnosis to be made with certainty whereas cultures are essential in cases in which the

lesions are restricted to the scalp It is to be hoped that such cultures will become routine measures for the matter is not one of purely academic interest When the scalp has been infected with *M felineum* the tendency to produce an erythema more easily enables efficient treatment to be attained by the use of kerionizing that is irritating ointments and radiotherapy thus becomes unnecessary After

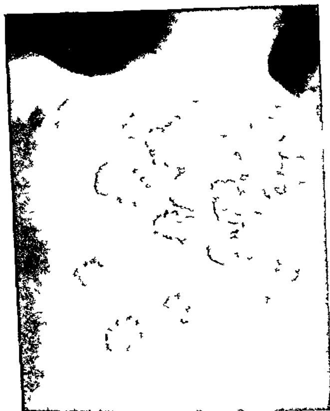


FIG 162 —Tinea circinata caused by *M canis*

careful shaving of the whole scalp such an application can be used twice daily and will produce cure in about 3 months This is the same time as is required for the radiotherapeutic course with its subsequent weeks of observation Excellent ointments which may be used are 10 per cent of salicylic acid in mercuric nitrate ointment or equal parts of soft paraffin and sodium chloride or simple mercury ointment

This relative simplification of treatment is but one point resulting from more exact diagnosis for it is obvious that relapses can occur if an unsuspected carrier is allowed to remain as the patient s companion It is true that this fungus can be passed from child to child but it can also be passed from cat to dog and from cat or dog to child The disease is actually more common in cats than in dogs and is

most frequently seen in long haired kittens or young cats Should there be a kitten in the house in which infection has occurred it is always worth examining the animal s ears, base of nose axillae and ventral wall for areas showing thinning of the hair and scaling Broken hair stumps are only rarely seen in animals but the fungus is easily detected microscopically in hairs taken from the affected patch (Thomson 1925) In any case, such a pet must remain suspect until a veterinary surgeon has absolved it

The incidence of *M felineum* infections is far higher than was at one time believed Exact figures for large numbers of cases are not available but Duncan (1945) has found this fungus present in about 50 per cent of the appropriate material sent to him for identification Certainly the incidence does vary with the locality, and there are some parts of the country in which *M felineum* is found in most of the cases of tinea capitis



Fig 163 —Tinea barbae caused by *T mentagraphytes*

CATTLE RINGWORM

Cattle ringworm is mostly caused by *Trichophyton mentagraphytes* and *T discoides* and is extremely common in both cows and horses in certain areas When the fungus invades the human scalp or beard it gives rise to so much local inflammatory reaction that a soft swelling is formed with redness oedema and pus (Fig 163)

This not only causes the hairs to fall out rapidly from the raised cushion but can closely simulate a superficial abscess Such a kerion of the scalp used to be *common in London children living in mews* when mews were occupied by their rightful inhabitants The horses rubbed their own irritating lesions against posts and so on and the children playing round these places were easily infected Today the disease is rare in the large towns but is still seen in country districts where it is most common among cowmen and may affect any of the exposed parts of the body The same inflammatory reaction occurs in the beard area when that is infected that is with tinea barbae Some Arab tribes call this infection the devil in the beard and treat it heroically with applications consisting in equal parts of spirit and creosote Most cases are however self curing in that the inflammation causes the hairs to fall out freely and spontaneously This process may at times be assisted by local fomentations of a 1 2 000 lotion of perchloride of mercury made up in normal saline solution

On the glabrous skin large rings are formed which may have a diameter of as much as 3 inches The spreading edge shows a necklace of large vesicles and pus tules whilst an inner ring is sometimes formed from a relapsing central vesicle

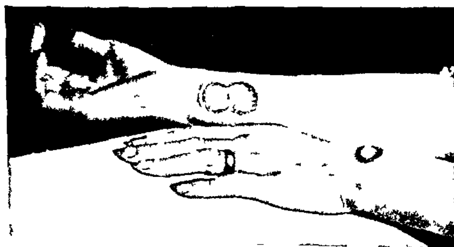


FIG 164 —Tinea circinata caused by *T discoides*

(Fig 164) Any ordinary fungicidal ointment will effect a rapid cure in most cases but a very few patients show great resistance to treatment so that strong applications have to be used even as in tinea pedis

FAVUS

Although this infection is uncommon in Great Britain it must be mentioned here During recent years the few cases which have been detected have failed to show the typical clinical picture of yellow cups Instead there has been a resemblance to ill-defined patches of indolent tinea tonsurans with long stumps such as are some times seen in the endothrix group of infections (*T sabouraudi T tonsurans* and

T violaceum) or in old standing and nearly cured cases of *M audouini* infection In these cases, favus has in fact been detected only by means of careful routine microscopy and cultures When an animal source is suspected rather than another patient it is important to remember that the cat s habit of playing with its mouse can result in favus infection of its own nose and jowl

MANGE

The ordinary sarcoptic mange of animals is caused by an acarus which so closely resembles the *Acarus scabiei* that only entomologists can distinguish between them In fact there have been some recent suggestions that they do not actually differ from each other at all but merely show adaptations to the particular hosts concerned The disease does of course affect such domestic animals as cattle goats and pigs but there have been one or two more interesting outbreaks For instance during World War I Dyson (1921) reported an epidemic among the camels of an artillery column in Palestine with consequent infection of every gunner—yet another repetition of history since Roberts s march on Kandahar almost failed for the same reason, all his camels and attendants being infected These events might well have proved of greater importance than was the now outdated cavalryman s itch caused by *Sarcoptes equi* Small epidemics of mange have been seen among the foxes and llamas at the Zoological Gardens London The chief source of trouble however again lies among the domestic pets Both cats and dogs can be infected but this time the dog is the more common offender In dogs the hair is thinned and the skin covered with a thick powdery scaling many larger scales and some scabbing The parasites can be found only by scraping the epithelium so firmly and deeply that blood is actually drawn Such material does however reveal the sarcoptes when lighter scraping is useless but it is surprising how difficult the diagnosis can be even in severe cases

Infection of the human being is not often seen in ordinary practice but many examples can be detected if the human companions at the animal out patient clinic be examined Any part of the body can be affected most lesions however are seen on the exposed surfaces including the face and particularly the arms and forearms of women There are indefinite scattered tiny red papules with some small scabs the appearance of which at once suggests the possible diagnosis of scabies but close examination reveals no runs whatever The fresh mange lesion is a tiny vesicle surrounded by a pink areola This is apparently caused by the bite of the spider for careful examination of serial sections and other material has revealed no traces of burrow formation sarcoptes or ova (Thomson 1931) Very short runs have been described but they are far from common In brief then when there is seen a case which smells of scabies but which shows no definite diagnosable lesions the possibility of mange should be suspected Confirmation of course depends upon whether the disease is found in the household pet Once reinfection of the human subject ceases to occur the disease dies out spontaneously within about 10 days This is true of all this group of animal parasites showing the adaptation to particular hosts and suggesting wider differences between the various strains than are obvious from simple study of the organisms themselves Long standing cases of the disease are caused by daily reinfection with dog sarcoptes For these reasons it

is not usually necessary to treat the patient after the animal has been dealt with but an ordinary scabies course can be given if such should seem desirable

Demodex mange is more uncommon in animals and is far more difficult to treat Whether or not these particular parasites can affect the human being is not clear for the demodex is sometimes found on normal skin when no animal contacts are apparent Very occasionally these mites do seem to be the cause of a spreading impetigo as described by Lawrence (1915) and later by Whitfield (1920) In such cases the discs formed by the broken bullae are very well defined and are circular discrete and few in number There is not the usual rapid smudging seen in ordinary impetigo and the lesions clear at once when sulphur ointment is applied

Before leaving the subject of domestic pets it is as well to remember that certain individuals strongly resent imputations as to possible infection from their pets A wary approach is always necessary for the resentment flares vigorously in some people if it is even hinted that the dog might have mange whereas the same individuals accept with equanimity a diagnosis of scabies in the child!

ERYTHEMA SERPENS

Erythema serpens was originally described by Baker (1873) and was given this name by him Later Rosenbach (1887) decided to call it erysipeloid but this title can cause confusion with the relapsing streptococcal lymphangitis often seen on the face and sometimes referred to as erysipeloide The infecting agent is the *Erysipelothrix rhusiopathiae* which has been proved to be pathogenic to hens ducks pigeons and peacocks as well as to fish and swine

The most common sites of infection are the fingers or hands of butchers fish mongers slaughterers and housewives In most cases there is a history of a prick from a bone 2–3 days before a local redness and irritation develop The lesion then spreads centrifugally as a sharply defined red disc with some tough dermal oedema Central resolution develops and leaves a bluish discoloration The lesion dies out spontaneously in 3–6 weeks in most cases but more severe infections can cause fever and fatal issues have been described For such severe cases a serum can be used but this method of treatment is itself not without danger The sulphonamide group of drugs has not helped materially the value of penicillin has not yet been ascertained Quinine given internally in doses of 3–5 grains 3 times a day seems to shorten the course of the disease Local applications may be used symptomatically as the necessity arises

WARTS

It need only be mentioned that the ordinary virus warts can be acquired by contact with animals dogs and cows being the most common sources Hand milking may result in infection of the hands and fingers and the writer has seen relapses occur several times in some cowmen such relapses always taking place after one particular cow has been milked In one such case the sequence of events was the more remarkable in that no warts could be detected on the teats or udder

ORF

The contagious pustular dermatitis of sheep is also known as orf It is caused by a virus and the fact that this may be transmitted to shepherds and others has been

recognized in Great Britain only for some 15 years It seems probable that the disease does, in fact, occur in many parts of the globe for recent discussions have shown that very suggestive but hitherto unrecognized lesions have been seen in the Near and Middle East The best accounts of the infection have been given by Peterkin (1937) and Blakemore Abdussalem and Goldsmith (1948) The lesions are usually seen on the fingers each starting as a dark red papule which attains the size of a threepenny piece and sometimes that of a florin The papule is at first hard and painless, it then develops a central umbilication and by then the general shape suggests a molluscum contagiosum nodule, looking like a bead on the skin The centre develops an exudate which rapidly becomes pustular, and pain is now apparent Gradually granulation tissue develops so that the appearance of the lesion becomes suggestive of granuloma pyogenicum The whole series of changes is spread over 3–8 weeks Treatment is symptomatic irradiation with x rays may have resulted in some definite improvement in some cases

VERRUCA NECROGENICA

The butchers or post mortem wart is in fact a reaction to local inoculation with the bacillus of tuberculosis The popular names are sufficient to disclose the contacts from which inoculation occurs through a small wound There gradually appears an indolent red patch on which rather flattened warty excrescences slowly develop and between these pus can be expressed On palpation the whole lesion reveals the infiltration characteristic of the granuloma Treatment along the lines usually employed in tuberculosis of the skin is rapidly efficacious The recent introduction of large doses of vitamin D with calcium has produced rapid cure in the only two cases which the writer has so far had the opportunity of treating in this way

BUTCHERS PEMPHIGUS

Improved supervision in the *abattoirs* has caused the almost complete disappearance of butchers pemphigus which was not very uncommon some thirty years ago Any worker handling diseased meat and who suffered a minor cut was liable to infection, which occurred after the handling of any type of meat Although streptococci have been blamed for the affliction no definite bacterial findings have been constant In fact, most attempts along these lines have proved sterile Within 12–24 hours after the accident there develops a pink flush at the site of the prick This rapidly becomes bullous with a normal background but haemorrhagic and purulent changes with their consequent erythematous areolar flare rapidly take place The lesions appear all over the body and are also seen in the mouth In the great majority of cases death has ensued within 3–6 weeks Treatment has proved of no real avail until the introduction of the sulphonamide group of drugs Since then the writer has seen recovery occur in several patients whose condition had seemed clinically hopeless In the severe case the acute and febrile condition is sometimes preceded by a patchy prodromal shower of erythematous macules

MILKERS NODES

These lesions do not seem to be at all common in Great Britain if they even occur at all but they are well known in Central Europe Mention must be made of them

however as they can so closely resemble orf or be mistaken for vaccinia or even for an indolent septic infection As is to be expected the virus usually invades the fingers on which the lesions are seen as single or multiple discrete nodules These start as yellowish brown swellings the colour of which changes to rose red by the time they have attained the size of a large pea Each swelling bears a central dimple which gradually develops an adherent crust Thereafter simple involution occurs without pus formation Most patients show slight fever and malaise during the active phase of the disease The total duration is from 6 to 12 weeks there then being no residual complications The virus bears a close resemblance to that of vaccinia but laboratory experiments seem to demonstrate their separate entities Treatment is symptomatic

BOTRYOMYCOSIS

It has long been recognized that this condition which is also known as granuloma pyogenicum is common in animals particularly in horses and that it tends to arise in wounds for example after castration The lesion thus arising is exactly the sam as that presented when the human being is affected The incubation period is unknown but it certainly is often extended over 2–3 months There first appears a small red nodule rounded and raised slightly above the skin surface this gradually increases in size becoming more definitely pedunculated although the neck is quite thick The epidermis is lost so that there is left a raw red surface which often bears a thin streak of pus Patients are usually referred to hospital at this stage with the diagnosis of naevus the term being used as synonymous with cavernous haemangioma This single growth—for there seems to be no record of more than one in any patient—is usually situated on the face or hands It certainly is seen more commonly in those who have to deal with horses but sometimes also in those who have to deal with swine Often of course no direct connexion can be traced but the incidence of the contacts mentioned above is far too high to be accidental The *Botryomyces equi* or *Micrococcus ascoformans* has been found sufficiently fre quently to make its pathogenicity likely in most cases In others staphylococci and streptococci have been blamed Treatment has to be drastic for the growth is com posed entirely of young fibrous tissue and vessels which spring from the dermis any destruction must therefore include the tissue just below the skin level Diathermy has proved to be the simplest clean and efficient method

BRUCELLA ERUPTION

This rash is seen on the hands and forearms of those who have to undertake vaginal examinations of cows infected with *Brucella abortus* Within a few hours of the con tact there develop small discrete papules which gradually become vesicular and then pustular Many of these are follicular and the changes last for 3 weeks when they disappear spontaneously Although it has never been proved that the organism is actually present in these lesions the type of rash and the definite course of the disease suggest a specific infection Certainly the clinical picture is different from that of an eczematoid type to which reference will be made later Some individuals seem to be susceptible and suffer from repeated attacks no protective ointments or systemic treatment seeming to protect them from relapse

OTHER TRANSMISSIBLE DISEASES

Before leaving the subject of directly transmissible and infective conditions reference must be made to vaccinia glanders anthrax and foot and mouth disease Perhaps rat bite fever should also be mentioned, since the purplish macules occurring in this disease often give the first clue to the diagnosis These subjects belong to the realm of pure medicine, however so that only a few comments are necessary Vaccinia is only rarely contracted from cattle nowadays When it occurs either as a generalized rash of embolic spread or as local inoculation lesions the antecedent vaccination proclaims the diagnosis Records of foot and mouth disease in human subjects appear in the literature, but as one of the rarest of diseases Glanders was fairly common forty years ago but legislation on matters concerning meat production and intensive treatment with mallein have caused the virtual disappearance of this infection It is sufficient to state that the animals concerned are the horse ass mule and jennet and that the site of inoculation gradually breaks down to form an ulcer The draining lymphatic glands become enlarged and nodules develop as farcy buds along the lymphatics Both chronic and acute cases have been known to occur Anthrax is still seen occasionally the infecting agents being shaving brushes or contaminated hides Were it not for the fact that infected animals are burned and that the bacillus develops spores only when outside the body there would still be a grave risk of serious epidemics The writer has found Sclavo s serum to be the most reliable form of treatment and has not had much success with the intravenous injections of Neosalvarsan advocated in South Africa

CONTACT DERMATITIS

There occur some eczematoid skin reactions to local irritation but these are not common and when they are seen they present no particular features only the history suggesting the correct diagnosis The first of these is that which occurs on the forearms and hands of veterinary surgeons who have to do vaginal examinations on cows The eruption is an eczema and is quite different from the brucella picture also it is seen in cases in which no question of that particular infection arises Protective ointments are only partially successful and attempts at desensitization have so far failed in the writer s experience Occasionally there is seen a reaction to the hide of the living cow and such eruptions following contact with a natural hide rug have also been recorded

Butchers dermatitis is another eczematoid reaction to animal contacts This time however it is a reaction to the raw meat and is seen in any type of work which involves such contacts There is no question of special reaction to diseased tissues for freshly killed animals seem to be particularly noxious It is perhaps more commonly seen in those who dress rabbits and those who handle sausage meat

INFESTATION AND SENSITIZATION

Dermanyssus gallinae infestation

Apart from actual diseases and the usual invading parasites very puzzling pictures can be presented as a result of bites or allied damage in other infestations Of these parasites the most important is probably the *Dermanyssus avium et gallinarum*

This organism is a minute red sometimes grey body It is not commonly seen except by those whose hobby concerns birds It is the red dust which is seen on the covering placed on a canary s cage when that is removed in the morning it is the grey tick seen in pigeon-cotes but it can infest any bird and dwells frequently in the nests of sparrows and starlings When these are situated in the creeper on a house wall the parasites find themselves without warmth and shelter after the nest has been deserted and the fledglings have flown They may then enter the house throu h an open crack or through a window and they speedily attack any host who may be near For instance the writer has known of a family who always suffered after entering the bathroom where an actual track from the window was eventually found The skin reacts by forming an irritable papule or a slight local urticaria and only rarely by the formation of a vesicle Any bird fancier or dealer in chickens who presents an indefinite irritable scratched rash mostly on exposed surfaces may have scabies but it may well be that he has been the site of a *Dermanyssus gallinae* orgy Treatment involves detection and removal of the infected nest or bird

Caterpillar dermatitis

Occasionally there are seen a few cases of caterpillar dermatitis in Great Britain As may well be expected the condition tends to occur in small epidemics and in definite localities The small hairs from certain caterpillars chrysalides and even from the adult moths enter the skin and act as foreign bodies These give rise to a small red irritable patch often round a hair follicle into which of course the foreign body can become more easily inserted This is exactly parallel to the lesions occasionally seen on the neck and upper part of the back following a haircut when a small clipped and sharp fragment of hair shaft may work its way into a patulous follicle and cause itching and redness closely resembling reaction to a bite Other Lepidoptera hairs however contain actual formic acid so that the reaction then becomes more clearly urticarial The most common of these caterpillars is that of the brown tail moth (*Euproctis chrysorrhoea*) Others are the gold tailed moth (*Liparis chrysorrhoea*) the fox moth (*Lasiocampa rubi*) the grass eggar (*L tre folii*) the oak eggar (*L quercus*) the drinker (*Odonestis potatoria*) and the light tussock (*Dasychira pudibunda*) The few cases that the writer has seen have always occurred in the autumn and the eruption has been concentrated round the neck Two moths secrete irritant fluids these are the puss moth (*Cerura vinula*) and the goat moth (*Cossus ligniperda*) Other species have been incriminated in Australia and Japan

Accidental parasites

This term is here used first to indicate the infestations which are not truly animal in origin but which occur in ostlers and others who handle grain and other food stuffs The cause of grain itch is an *acarus the Pediculoides ventricosum* In some cases a mite is responsible a tyroglyphus which is akin to the harvest mite In any case the skin reacts by producing small patches of urticaria at the sites of the bites with intense and disproportionate itching Slight fever can occur

Various animal parasites may be acquired by human beings These mostly concern very temporary infestation by dog fleas and so on but at times a more definite picture is seen for example the ferret louse has been known to attack a man In

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CHAPTER 22

SCABIES AND PEDICULOSIS

M FEIWEL

SCABIES

SCABIES is caused by infestation with a small acarine mite *Sarcoptes scabiei* var *hominis* a parasite which is only found in man Other varieties of acari which attack animals may produce disease in man but they do not produce identical symptoms

Close personal contact and lack of washing facilities favour the liability to infection War conditions increase its incidence Children may become infected at school and bring scabies home to their families An itchy eruption should be suspected of being scabies irrespective of the social class and standing of the patient

The life-cycle of the parasite is described on page 371

Clinical features

Itching which is worse at night in bed and results in much scratching is usually the main symptom

The rash is variable in its extent The diagnostic lesion of scabies is the burrow which the female excavates within the cells of the upper part of the epidermis On the surface of the skin the burrow is recognized as a whitish or more commonly dirty grey irregularly sinuous beaded ridge about ½ centimetre long The acarus may be seen as a speck at the closed end The burrows are located in certain sites of predilection These are in the interdigital webs the flexures of the wrist about the ulnar border the points of the elbows the anterior axillary folds round the nipples in women the lower abdomen the genitalia the sides of the natal cleft and the lower parts of the buttocks round the ankles and on the dorsum of the feet In infants the palms and soles are characteristically involved Other lesions more numerous than the burrow make up the rash of scabies These do *not contain the parasite and consist mainly* of small follicular papules and vesicles Many of the papules are excoriated and the vesicles are ruptured by scratching The vesicles are found on the hands and feet the papules are most profuse around the sites where the burrows are found and more sparse in the intervening areas The rash of scabies then has a characteristic distribution (*see* Fig 7 (b)) and appears most marked on the forearms the *anterior* axillary folds and on the front of the body from the nipples to the knees When the patient is turned round it will be seen that the back is clear except for the buttocks

Secondary infection and sensitization of the skin is common Pustular crusting and weeping areas are found The pyodermia may result in ulceration especially when the skin is exposed to *trauma* In soldiers ecthyma of the lower legs was a

this case the parasite was firmly attached to the skin into which it had inserted its proboscis and was seen as a pea sized ivory and brown nodule on the skin surface

Finally, it must not be forgotten that actinomycosis and blastomycosis are acquired through contact with straw or wood, both are particularly liable to occur however in those whose labour involves farming including work with animals Though actinomycosis and blastomycosis do not strictly belong to this chapter they are so closely allied to the subject that mention of them is reasonable

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This one-day treatment has given good results in thousands of cases Benzyl benzoate emulsion is quite suitable for children

If more thorough treatment is considered advisable paintings are repeated daily for 3 days and clothes and bedclothes are disinfested

In some patients lesions will persist and itching continue This is not due to survival of the parasite and will not respond to further parasiticides Soothing lotions such as lotio calaminae oleosa are then called for

PEDICULOSIS

Pediculosis capitis

The head louse (*see* Suborder Siphunculata (Anopleura) page 367) chiefly affects children of poorer homes but is quite often found in women rarely in men long hair is a predisposing factor Itching is the main symptom but some infested individuals feel no itching The eruptions set up by the bites of the insects vary in severity In the worst cases a pyodermia especially of the occiput and often spreading to the back of the neck and behind the ears results from secondary infection The hair may be matted together by the crusts Tender enlargement of the posterior cervical and occipital glands may be found All cases of impetigo of the scalp especially in children should be examined for pediculi or nits

Treatment

Clipping the hair is necessary only in severe cases with pyodermia The lice are more readily killed than are the nits New insecticides have come into use in recent years and have simplified the treatment Lethane 384 50 per cent in a white oil (Applicatio Lethani *N F*) is effective For children 30 minims (2 millilitres) and for women 120 minims (8 millilitres) are required The oil is applied with a dropper to the scalp along partings 4 on each side of the head it is gently massaged over the scalp with the finger tips The hair is not washed for one week it is then shampooed and combed out with a fine toothed metal comb to remove the dead nits

Dichlor diphenyl trichlorethane (D D T) 2 per cent emulsion (Applicatio Dicophani *N F*) is also reliable Fifteen millilitres are worked into the scalp with fingers or brush and washed out 24 hours later

Pediculosis corporis

Infestation with the body louse is uncommon in civilian life It is found in conditions that necessitate sleeping in day clothes and therefore occurs chiefly in the occupants of common lodging houses in vagrants and the aged It used to be particularly prevalent in soldiers on active service and caused a great amount of skin disease A striking contrast is provided by figures from World Wars I and II In 1916 95 per cent of British troops were reported as infested in 1944 in Normandy only 1 per 1 000 personnel per month was lousy Warfare had become more mobile and shirts were impregnated with D D T

The body louse lives in and lays its eggs near the seams of the clothing In heavily infested persons nits may be found in the axillary pubic and perianal hair The insect comes on to the body to feed The bites give rise to closely set small red macules but the skin lesions are mainly those produced by scratching They are

disabling consequence of infected scabies In women a troublesome eczema of the nipple may result Impetigo or urticaria that does not clear with treatment may be due to underlying unrecognized scabies Men may present themselves at venereal disease departments mistaking the papules of scabies occurring on the shaft of the penis for venereal sores

Diagnosis

The diagnosis is established by *finding a burrow in one of the special sites* When a burrow is seen the diagnosis can be confirmed by the microscope in two ways The roof and contents of a burrow are gently scraped on to a slide with a scalpel *moistened with liquor potassae Among the epithelial debris should be found the* adult female a nymph or ova The second method depends upon visualizing the acarus with the naked eye or a lens as it is lying at the end of a burrow The horny *cells are gently* scraped away above the acarus with a needle the parasite then clings with its legs to the point of the needle and it can readily be lifted off the skin and transferred to a slide

On the rare occasions when a burrow cannot be found the diagnosis presents difficulty This is most likely to occur in a clean individual The patient should be instructed to forgo his bath for a few days and then be re examined—a burrow may then be found When visible signs are scarce the cause of the patient s pruritus may be ascribed to psychogenic factors It is wise to think of scabies when the patient states that the itch occurs in bed and that he picks at his skin An infant which lies in its cot rubbing its soles together probably has scabies

The disease is progressive In neglected cases the number of acari may become enormous and the whole skin including the face and scalp may become *involved* (Norwegian scabies)

Treatment

It is advisable to treat the whole family when a case is diagnosed even when the members other than the patient show no clinical evidence of infection Only when the household is treated at one and the same time is the life cycle of the parasite effectively interrupted

Treatment can be carried out at home or at special scabies treatment centres when these are provided by the public health authorities

Twenty five per cent emulsion of benzyl benzoate (Applicatio Benzylis Benzoatis *N F*) is an effective parasiticidal preparation

The patient is instructed to carry out the following procedure

(1) To take a warm bath rub down with soft soap and rinse

(2) While still warm and wet to paint the body from the neck to the toes with the emulsion using a shaving brush a painter s brush or the hollow of the hand

(3) To allow the first application to dry and then to repeat the painting a second time

(4) To dress in the same set of clothes as worn before the bath

(5) After 24 hours to take a further bath and put on fresh clothing

CHAPTER 23

ARTHROPODS IN RELATION TO SKIN DISEASE

ALAN FISK

THE GENERAL characteristics of the phylum Arthropoda are that the organisms have greatly enlarged baggy veins a very restricted coelom and a double solid nerve cord for the most part ventral to the gut Externally arthropods are bilaterally symmetrical and exhibit more or less prominent metameric segmentation (transverse division of the body into segments) They possess numerous paired appendages each with many joints some of these limbs serving as jaws some as walking legs while some are modified for other purposes The body is covered externally by a massive cuticle which necessitates periodic ecdyses or moultings during growth the cuticle being in general rigid and preventing any increase in volume of the body

The Arthropoda may be divided into four classes Crustacea Insecta Arachnida and Myriapoda of which all except the Crustacea contain members which by virtue of their mode of life are the direct cause of or instrumental in bringing about dermatitis skin infections or skin lesions in man They are harmful in that they are parasitic or predatory or produce noxious substances Thus in order successfully to combat their activities a knowledge of their structure feeding and breeding habits and general physiology is desirable

CLASS INSECTA

The insects are terrestrial arthropods generally with the body clearly divided into head thorax and abdomen the head bearing one pair of antennae and three pairs of limbs modified to form mouth parts the thorax bearing three pairs of walking legs and in general two pairs of wings and the abdomen bearing few if any specialized structures The body form may be greatly modified in relation to the parasitic mode of life The freely motile predatory insects show the typical body form and in general only the mouth part are greatly modified (as in mosquitoes) The more permanent the relationship to the host the greater the degree of simplification in the body thus in bed bugs the walking legs are not greatly modified but only vestiges of wings remain while in the body louse no trace of wings occurs and the legs are poorly developed for locomotion but well adapted for grasping Greater modification occurs in the crab-louse locomotion being further restricted and the gripping powers of the legs being further enhanced

There are three main types of insect life history In the ametabolous insects (Apterygota) when the egg hatches the young emerges as a small replica of the adult and only minor structural differences can be discerned This type of life history is restricted to relatively few insects of no medical significance such as silverfish the rest are either hemimetabolous or holometabolous The egg of hemimetabolous insects (Exopterygota) hatches to produce a nymph which resembles

most marked on the back of the shoulders around the waist and on the upper part of the buttocks The lesions are papular and are surmounted by bloody crusts and linear excoriations, often criss cross In long standing cases the skin lesions become eczematous lichenified and pigmented (vagabond s disease) In soldiers septic complications such as boils and ecthyma of the legs are common

Treatment

Disinfestation of the clothing and bedding is performed and the patient takes a hot bath This can be done at the cleansing station In cases in which nits are attached to hair, the bath should be followed by the application of D D T emulsion

Pediculosis pubis

The crab louse lives in the hair of the pubic region and of the adjacent thighs and abdomen The hair of the axillae eyebrows and even eyelashes and the body hair in the hirsute may be invaded The insect is usually found holding on to two adjacent hairs with its claws When it feeds it introduces the head into the mouth of the hair follicle The bites give rise to irritation, which may be severe and sometimes to a pustular eruption

Infection is through contact with contaminated clothing bedding, from public conveniences or by intimate contact The diagnosis is established by finding the tiny active reddish brown insect the ova and the rust like spots of excrement Pigmented slate blue patches that may occur on abdomen or thighs are due to introduction of material from the salivary glands

Treatment

The hair should be clipped but not shaved and washed Benzyl benzoate *emulsion or D D T emulsion is applied, two treatments* at 24 hour intervals may suffice

consists of tubes or tracheae opening to the exterior by pores (spiracles) These tubes are composed of flattened epidermal cells for the most part strengthened internally by cuticle thrown into spiral folds Tracheae ramify throughout the tissues internally there are fine branches and air sacs in which the cuticular lining is extremely delicate and permeable to oxygen and water The insect breathes by

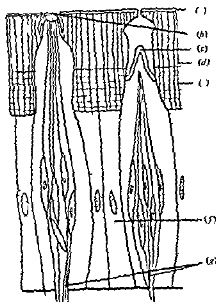


FIG 165 —Section of insect skin (diagrammatic highly magnified) (a) epicuticle (b) cuticular plate (c) cuticular peg (d) exocuticle (e) endocuticle (f) epidermis (hypodermis) (g) nerve fibres

expanding and contracting the body thus drawing air in through the spiracles and expelling waste products of respiration This system can be utilized for killing insects by either occluding the spiracles by the use of oil or a like substance and thus preventing respiration or by the introduction into the air of poisonous substances (fumigation)

The alimentary canal

Many insects are vulnerable through their alimentary canal Unfortunately the majority of the insects which are directly harmful to man feed on the living tissues and thus it is undesirable to poison their food Poisoned food is used a great deal in the control of such commercial pests as cockroaches

Mouth parts

The mouth parts (appendag s modified to form jaws) are structurally related to the type of food In most parasitic insects the jaws have a twofold function and parts are modified for piercing and parts for sucking Also there is generally a

the adult in general body and jaw structure and also in food requirements but lacks wings The wings appear gradually during successive moults or suddenly on completion of the final moult There is never a resting pupal stage, this gradual change is called incomplete metamorphosis

The insects which undergo complete metamorphosis may be described as holometabolous (Endopterygota) and in these the larva differs markedly from the adult in body form mouth parts and food requirements In such insects (the butterfly is a well known example) the egg hatches as the larva which grows without greatly altering in form Larval life is followed by a non motile pupa in which a radical reorganization of the body substance occurs Finally from the protective case of the pupa, the adult (or imago) emerges as a fully developed insect

Insects of medical significance are found among the hemimetabolous and holometabolous types and for their successful eradication a knowledge of their life history is essential All stages in the life history of a hemimetabolous insect will be found in much the same environment and in a population both nymphs and adults will occur among the holometabolous forms, there are some in which the adult is parasitic on man, and the larva is free living (mosquito) and others in which it is the larva that is parasitic, the adult being free living (organisms producing myiasis) In these holometabolous insects, the habitat of the free living form must be discovered, and not only the parasite destroyed but also the free living form which is the source of a potential parasite or parasites

Important structural and physiological features of insects

The cuticle

The cuticle is a leathery or horny secretion covering the epidermis It protects the insect against loss of water and from attack, while internal extensions of the cuticle serve as centres for muscle attachment there being no true endoskeleton The cuticle is made up, in general, of three layers Immediately outside the epidermis is the endocuticle then the exocuticle and covering this the epicuticle (Fig 165) Both endocuticle and exocuticle are traversed by minute canals thought to contain filamentous processes from the epidermal cells while the epicuticle is homogeneous and unperforated The endocuticle consists largely of chitin the exocuticle of chitin and cuticulin and the epicuticle of cuticulin Many important characteristics of parasitic insects are related to the possession of such a cuticle and particularly to the epicuticle The cuticulin of which this latter is largely composed is unaffected by cold acids is insoluble in most organic solvents and is impermeable to water Thus the insect is protected from most harmful substances and also from loss of water a danger to which insects would be particularly susceptible in view of their small size and consequently relatively large area Injury of the epicuticle by abrasive dusts may lead to increased water loss and death by dehydration The nature of the cuticle is of supreme importance with regard to the use of contact poisons such as D D T as only such substances as will pass through the cuticle can be used in this way to poison the insect

Respiratory system

Another organ system in the insect through which it can be attacked by insecticidal substances is the respiratory system In insects and most insect larvae this

Order Hymenoptera

The members of this order have four membranous wings large mandibles maggot like larva and great and abrupt metamorphosis and the females and neuters have an ovipositor saw or sting at the posterior end The body is generally sharply divided into head thorax and abdomen In one group (which includes gall flies ichneumon flie and saw flies) the ovipositor is modified as a boring instrument whereby the eggs are inserted into a suitable position Members of this group are incapable of stinging The stinging Hymenoptera (*H aculeata*) include ruby wasps (which have an insignificant stinging power) bees wasps and ants Not all the members of the various groups sting man but many are capable of inflicting a painful and in some circumstances a lethal sting

Bees (Apidae) have a hairy body an extensible mouth apparatus and always bear wings Some bees are social in which case barren females (neuters workers) exist to perform all the activities of the community except reproduction

The wasps (Diploptera) usually present the front wings folded when in repose and many show pronounced warning coloration Solitary as well as social species occur and in the latter workers are differentiated The hornet whose sting has an exaggerated reputation for toxicity is included in this group

The ants (Formicidae) generally show a well marked neck and waist They are social and the workers are always wingless Some bite as well as sting Many ants *habitually* invade dwellings and successful eradication entails the destruction of the whole colony boiling water or if out of doors petrol or carbon disulphide can be used

In the bee the sting is a powerful barbed hollow needle which injects the venom *secreted by several* glands The venom contains albumins and an acid an important constituent has been named apitoxin and histamine has also been stated to be present which if true would account for the cutaneous reaction The sting and venom are of an essentially similar nature in the other stinging Hymenoptera in some of which (ants) formic acid has been identified as an important constituent It is well established that immunity to bee venom can be acquired Bee keepers usually find themselves immune in a matter of a few weeks Abnormal sensitivity to bee sting can usually be reduced by injection of extracts made from the bee and it is stated that such injections also protect against wasp and ant stings

In general stings may result in widespread congestion and oedema a partial paralysis of the part stung convulsions and respiratory troubles The local effects are much greater if it is a mucous surface that is stung and the severity of the symptoms is correlated with the number of stings thus again suggesting reaction to histamine adrenaline and antihistamine drugs are suitable antidotes

Order Coleoptera

The beetles are characterized by the conversion of the anterior pair of wings into horny protective elytra which meet in a straight line down the back the jaws are adapted for biting The larva is often active and has a clearly defined head thorax (with appendages) and abdomen the more inactive types show a correspondingly reduced development Pupation usually occurs in the earth or buried in the medium on which the beetle lives Beetles are of course of enormous commercial significance being one of the most important pests of stored products Relatively few

functional modification of the salivary gland the secretion of which is passed into the wound caused by the piercing mouth parts and prevents the clotting of the blood which would otherwise block the suctorial parts Many of the allergic or anaphylactic reactions to insect bites may be traced to this hypodermic injection of saliva It is important to remember that insect bites even if they do not produce an allergic reaction may be harmful in producing a lesion open to invasion by micro organisms

Stings

Many insects possess stings which give a hypodermic injection in some cases of an antigenic nature from other insects some ants for example, a poisonous substance such as formic acid is injected

HOLOMETABOLOUS INSECTS

The insects that have a worm like larva (maggot, caterpillar) and undergo *complete metamorphosis include many of dermatological importance*

Order Lepidoptera

This order is characterized by an adult with four scaly wings and suctorial mouth parts caterpillar larva with powerful mandibles considerable and abrupt metamorphosis and a dormant pupa The butterflies and moths show the general insect features to perfection and have a life history characteristically holometabolic The egg hatches to form the caterpillar, which is usually vegetarian this when fully grown pupates in a protective envelope (chrysalis) and from the pupa emerges the imago—the butterfly or moth Many caterpillars, notably those of the *processionary moth Cnethocampa processionea* (found on oak trees in Europe) *Cn pinivora* (in pine forests) and *Cn pityocampa*(on heaths and open spaces) produce serious and widespread dermatitis Dangerous caterpillars are also found in the genera *Lithobia* (Italy) *Liparis* and *Bombyx* (in Europe) and probably also in *Lycaena* and *Cyaniris* and others So dangerous is the action of these caterpillars that there is a firm basis for the belief that the processionary caterpillar was an ingredient used by Lucrezia Borgia and others in the entertainment of their friends These caterpillars bear barbed hairs and produce a vesicant secretion from the skin causing blistering and itching and leading frequently to widespread and allergy like responses accompanied by extensive dermatitis Fragments of the caterpillar, debris from the chrysalis and the newly emerged moth while still powdered with the contents of the chrysalis can produce a similar effect which may spread to the eyes and mucous surfaces A different type of venomous gland *associated with the mandibles is found in the caterpillar of the* goat moth (*Cossus lipniperda*) which lives in tunnels bored into trees particularly the willow

Some moths themselves possess poisonous hairs which readily penetrate the skin of man and produce a similar response to that of the poisonous caterpillars *Hylesia* (family Saturnidae) has been shown to produce dermatitis and in Cayenne at the end of the *rainy season this dermatitis is very common* especially among children The moth of the Nigerian wild silk worm has an abdomen covered with barbed irritant hairs which it is said to scatter over its eggs Care in handling caterpillars and avoidance of woods and heaths thickly populated by *Cnethocampa* are obvious precautions to be taken The allergy like reaction is usually transitory

than 2 millimetres long with long bristles at the posterior end These flies may be so small that they can penetrate the meshes of ordinary mosquito netting Although it is often held that only the female can bite in some types the male has mouth parts which are apparently adapted for blood sucking Phlebotominae are mainly nocturnal but will also bite by day usually on the arms or legs When disturbed they show a peculiar form of flight resembling hopping they are also capable of flying long distances and their flight is silent Species of *Phlebotomus* occur in southern Europe Africa tropical America and in the hotter parts of Asia and North America It is common knowledge that *Phlebotomus* is the vector of sandfly fever (papataci) and there are strong grounds for suspecting that it plays a part in the dissemination of kala azar and oriental sore The bite is painful and in certain circumstances (probably including a preliminary sensitization) may lead to severe dermatitis

Family Culicidae (*mosquitoes gnats*) —These are very slender flies with only sparsely developed hair particularly noticeable on the posterior surface and veins of the wings The mouth parts in the female are modified to form a long piercing probo cis The male lives on plant juices is usually smaller than the female and possesses large plumed antennae Over 1 500 species are known varying in habitat from the tropics to the Arctic The details of the life history are modified to suit the locality but in general feeding ceases at below 23 C and the insect becomes comatose at 20 C The eggs are laid singly on the surface of water by *Anopheles* and *Stegomyia* or as a raft by *Culex* they are usually provided with some device to assist floating and hatch to produce the aquatic larva This larva is active and has a well developed head and feeds on minute aquatic organisms it breathes mainly through respiratory siphons which project through the surface film of the water from which the larva and the pupa usually hang suspended *Culex* hangs down ward whereas *Anopheles* lies horizontally other forms (*Stegomyia*) which obtain their food at the bottom of the water have short respiratory siphons and large gills (the gills are relatively small in the surface inhabiting forms)

As with most blood suckers the mosquito injects saliva to prevent clotting of the blood The exact nature of the saliva is not fully known but the presence of haemo lytic substances is strongly suspected By virtue of their method of nutrition the Culicidae act as vectors for many diseases such as malaria yellow fever and ele phantiasis They also cause dermatitis and skin lesions not only by secondary infection of the bites (which being intensely irritating cause scratching) but also because of allergic reactions to the bite Sensitization may result in great reactivity in the patient sometimes accompanied by dermatitis a severe Arthus response and necrosis The sensitivity can be transferred to normal people by local inoculation of serum from a sensitized person After repeated exposure to bites immunity generally develops (A case has been reported of a mother with acquired immunity giving birth to a naturally immune baby greater evidence for this handing on of immunity would be required before it could be given full credence) The measures to be taken against mosquitoes are so numerous and have to be adapted with such care to local conditions that it is impossible to deal with them here They are in general chemical (the use of insecticides) physical and biological (the encourage ment of organisms predatory on mosquitoes during a phase of their life history) Former comprehensive claims regarding the efficacy of D D T as a lethal substance

cases, however, have been reported of allergic responses to the presence of beetles in such material Reported examples seem to be mainly responses to the presence of fragments of larvae, particularly the more hairy forms *Dermestes* a common household and domestic pest was the probable cause of an outbreak of dermatitis (with other allergic symptoms) in a group of dockers

Many beetles secrete a vesicant fluid containing cantharidin, the most important being in the family Meloidae which is characterized by the possession of a clearly defined neck and a soft cuticle Most of these blister beetles are brightly coloured In the subfamily Lyttinae the elytra and wings are normally developed (for example the so called Spanish fly), the *Meloinae* are wingless and ant like Severe dermatitis has been caused by members of both these subfamilies when the beetle has been crushed on the skin Apparently the fluids of the beetle enter the skin assisted by their vesicant nature and by the fragments of hard material of the crushed beetle which scratch the skin The condition is generally more acute when the skin has been rendered soft by sweating Some beetles, such as the bombardier beetle, have the power of ejecting a jet of vesicant malodorous fluid

Order Diptera

The order Diptera is characterized by having only one pair of transparent generally small wings the posterior pair being modified to form the minute hal teres The head is joined to the thorax, the segments of which are combined in a single mass by a well defined neck The mouth parts are adapted for sucking and sometimes for piercing never for biting and frequently take the form of a retractile proboscis Great and abrupt metamorphosis occurs the larva is usually devoid of appendages and maggot like there is variety in the form of the pupa A very large number of insects of medical importance is included in the Diptera They produce their effects either by the piercing bite of the adult the parasitism of the larva (myiasis) or by the contamination of food and the destruction of crops In the first two categories are included many that are a primary cause of dermatitis in man or by secondary infections are the cause of widespread skin lesions (The order Diptera is generally subdivided into suborders Orthorrhapha and Cyclorrhapha but the *diagnostic features of these suborders are still very vague*)

Series I Nematocera

The adult is characterized by the possession of a pair of many jointed antennae which are longer than the combined length of head and thorax The larva has a well developed head and its mandibles which operate horizontally are adapted for biting

The series Nematocera is divided into a number of families some of medical importance others though easily confused with the important forms are of no significance

Family Psychodidae subfamily Phlebotominae (sandflies moth flies) —These are minute flies (the body length is generally less than 3 millimetres), grey yellow or brown, with the body coated by long coarse hairs and often by scales The wings show prominent longitudinal veins cross veins are not obvious and in repose the wings are elevated Eggs are laid in damp crevices drains dirty basements and in damp soil The larva feeds on decaying matter and when fully grown is rarely more

Family Asilidae (robber flies)—In the family Asilidae or robber flies there are members that are stated to attack man occasionally

Series III Athericera

The adult of this series possesses three jointed antennae the larva has a vestigial head and retains its cuticle in the last larval stage as a protective case for the pupa The series comprises a number of forms of no medical importance such as the hover fly (section Aschiza) A few members of this section are believed occasionally to produce an accidental myiasis of the intestine

The forms of medical importance are found in the section Schizophora Those members of this section in which the halteres (reduced posterior pair of wings) are visible include many forms that attack plants a few that attack small animals and none that attack man those in which the halteres are covered and invisible include a number of biting flies and all the organisms that normally cause external myiasis

Family Oestridae (warble flies bot flies)—Most of the flies causing myiasis are found in the family Oestridae They are stout and fairly hairy generally resembling blowflies with vestigial mouth parts short antennae and a wing venation similar to that of the house fly *Dermatobia hominis* (tropical America) lays its eggs on the body of another organism usually a fly which is capable of biting man This vector fly serves to carry the egg to a suitable host the larva penetrates the skin and parasitizes the dermal layers In other forms for instance *Cordylobia anthropophaga* (Africa mainly parasitic on rats) the egg is laid in a place frequented by suitable vertebrates but the larva is again capable of entering uninjured skin Most of the warble flies attack domestic animals and occasionally man attaching the egg to the body surface the larva then passes to the region most suited for its future development (*Hypoderma* Europe *Gasterophilus* Europe and Russia *Oestrus* Europe S America and Asia)

In the forms in which the larva enters the undamaged skin of man a small red spot generally develops at the point of entry Widespread itching may develop multiple infection leads to a condition closely resembling scabies Secondary infection by micro organisms is common *Cordylobia* and other maggots have been shown to elicit an immune response and animals have been rendered immune by vaccination with a preparation of the bodies of maggots formation of antibody has been demonstrated In the cow a maggot crushed in the tissues may produce a typical general anaphylaxis

In the case of *Cordylobia* destruction of rats assists in control and in all districts liable to contain myiasis producing flies small pimples and a scabies like condition should be regarded as suspect

Family Sarcophagidae (flesh flies)—Other flies producing myiasis are found in the family Sarcophagidae or flesh flies particularly abundant in Russia Although they mainly attack domestic animals cases have been reported of *Sarcophaga* attacking man The parasitism of many of these larvae is often called creeping eruption and larva migrans general terms including examples of helminth parasitism

need to be carefully reconsidered in the light of recent work, which indicates that to certain species of mosquito at least D D T acts rather as a repellent than as an insecticide

Family Chironomidae (midges) —These are delicate flies with a small head, the wings are without scales and show more well marked anterior than posterior veins and in repose the front legs are usually lifted The larvae are aquatic (bloodworms) or terrestrial and respire through the general surface of the body Over 1 000 species have been described they are very widespread and although they show a general resemblance to Culicidae the majority are incapable of biting The Chironomidae are not known to carry disease but the bite for example of *Culicoides* and *Johannseniella* may be painful and be followed by reactions recalling those to the Culicidae *Culicoides* is suspected to be the vector of Delhi boil Some Chironomidae are so small as to be able to penetrate ordinary mosquito netting

Family Simuliidae (buffalo flies) —These are small, stout short legged flies having broad wings with thick anterior veins, and antennae scarcely longer than the head Some species are brightly coloured, and in all the female is a voracious blood sucker They occur universally, sometimes appearing as a swarm capable of killing domestic animals and it is said even man Eggs are laid in water, sometimes the female will descend a foot or more below the surface to do this The larva possesses suckers and is thus enabled to live in running water All Simuliidae belong to the genus *Simulium* of which there are numerous species In biting a toxin is injected which appears to have a specific effect upon heart and brain General symptoms include vertigo respiratory disorder and acceleration of the pulse A hard, painful local swelling arises which takes up to 10 days to disappear As the habitat of the larva is running water control is difficult and involves either damming the stream or the use of biological measures such as the introduction of suitable fish

Series II Brachycera

The antennae of the adult are shorter than the thorax and usually three jointed The larva has an incomplete head which is usually retractile and bears mandibles that bite vertically In this series are 14 families of which only 3 are known to attack man

Family Tabanidae (horse flies clegs gad flies) —These are stout flies without bristles with large laterally extended eyes and projecting piercing proboscis in the female Over 2 000 species are known distributed all over the world In general the body is flattened and of a nondescript colour but some species are brightly coloured Most species are powerful fliers and produce a characteristic humming note Tabanidae attack mainly animals but man is by no means free from their attentions The eggs are laid on plants generally in marshes where the carnivorous larva grows and pupates the pupa showing a superficial resemblance to that of the Lepidoptera The bite of the adult female is painful and even stout clothing is not a certain protection In addition to the usual possible consequences of the bite some Tabanidae are suspected of carrying trypanosomes and the organism of Calabar swellings

Family Leptidae —The family Leptidae includes a few European and American blood sucking organisms The general body form may resemble that of the Tabanidae but in some the body is almost gnat like

the dog cat mouse and rat fleas will also attack man in the absence of the favour ite host A number of fleas are capable of spreading plague owing to the regurgitation during feeding which occurs in infected fleas and also due to the presence of the micro organism in the faeces of the flea A particularly unpleasant flea occurring in the tropics which frequently causes extensive lesions in man is *Tunga penetrans* (*Dermatophilus penetrans* chigoe jigger) the female of which burrows into the skin



Fig 166 —A flea larva

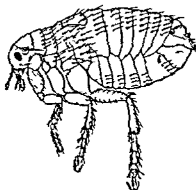


Fig 167 —♀ *Pulex irritans*

of the host so that finally only the tip of her abdomen protrudes Here she feeds and swells enormously and produces numerous sticky eggs which are shot out with such force that they are propelled for a distance and stick on to any object they hit If the female is crushed in the tissues violent inflammation occurs The egg develops as in other fleas

Tunga attacks mainly the feet and care should be taken to avoid likely infection caused by walking barefoot or using infected footwear Vaseline and Lysol act as deterrents The normal host of *Tunga* is the pig the tropical and subtropical fowl flea (*Echidnophaga gallinacea*) like *Tunga* has also been known to parasitize man Immunity to flea bites can be acquired and persons sensitive to flea bite have been immunized by injection of an extract of adult fleas Dimethyl phthalate and citronella oil repel fleas property can be disinfested with D D T or Gammexane

Hemimetabolous Insects

The remaining insects are hemimetabolous and the young and adult are similar in most respects and feed in a similar manner

Order Hemiptera (Rhynchota)

Bugs are characterized by piercing suctorial mouth parts and the terrestrial forms have prominent usually four jointed antennae The body is flattened the legs are powerful and most forms possess two pairs of wings of which the anterior pair is generally horny Metamorphosis is gradual

The most important genus is *Cimex* *C lectularius* (Fig 168) is common in Europe and North America and found nearly everywhere while *C rotundatus* is

Family Muscidae —Finally, among this type of fly the family Muscidae is of importance In most forms the egg is deposited in rotting matter, the maggot hatches, pupates and the fly emerges The house fly and the blowfly are familiar examples and from their insanitary habits cause much disease Several are known to cause an accidental myiasis while *Chrysomyia* (Russia and the Mediterranean) breeds frequently in living tissues by infecting a wound or penetrating a mucous membrane apparently attracted by foul smells so that dirty and diseased persons are particularly susceptible Included in the Muscidae are several blood sucking flies notably *Glossina* (tsetse fly) and *Stomoxys*, which latter breeds in manure and is particularly liable to give an infected bite and to produce sepsis while the larvae of others (*Auchmeromyia* the Congo floor maggot) live in human habitations and suck blood In the case of the tsetse fly, eradication is particularly difficult as the fly is viviparous and the larval period which is the vulnerable stage in all flies is of short duration

Control of the tsetse fly may be aided by the new trypanocidal drug Antrycide the use of which may in the future enable country to be opened up which is at present largely uninhabitable owing to the prevalence of sleeping sickness Recent work, however, indicates the existence of resistant strains of trypanosoma

Series IV Pupipara

This series comprises small, blood sucking viviparous flies (compare *Glossina*) only fortuitously parasitic on man and of little importance They include the sheep tick , *Melophagus* which is wingless and the minute louse like *Braula* a parasite of bees

Repellents

With regard to Diptera in general insect repellents such as citronella oil are of great value, the best is probably dimethyl phthalate (This does not repel all Diptera but effectively repels mosquitoes and gnats It must be used carefully as it is an irritant and it also attacks plastics)

Order Aphaniptera (Siphonaptera)

Fleas are small laterally flattened and wingless insects they have short antennae and mouth parts adapted for piercing and sucking The larvae are maggot like and without legs (Fig 166) the pupae are enclosed in a cocoon Metamorphosis is great and abrupt Fleas are found only on warm blooded animals, and they show a marked response to warmth leaving the body of their host on its death There is no great specificity in the host parasite relationship and most fleas feed on a variety of hosts The white eggs are not cemented on to the host and readily fall off to hatch in some dirty crack or crevice or sheltered in matting or straw The little blind maggot feeds on organic detritus and is not parasitic When it has reached a length of about 4 millimetres it spins a cocoon usually masked by adherent dirt The adult remains dormant in the cocoon until stimulated by vibrations when it emerges to seek its first meal Fleas occur in most parts of the world, the commonest found on man being *Pulex irritans* (Fig 167) which also readily attacks rats badgers and some other mammals Many other fleas including

Suborder Mallophaga

The biting lice do not normally parasitize man They may be distinguished from the sucking lice by their biting mouth parts and in general by the relatively large head They are the cause of much irritation in many animals including the domestic fowl they are the probable explanation of the frequent dust baths taken by birds *Menopon pallidum* has been reported to infest humans exposed to prolonged contact with chickens it produces irritation

Suborder Siphunculata

Sucking lice are ectoparasites of mammals the head is small the antennae short and the mouth parts kept retracted in the head when not in use are highly modified for piercing and sucking The legs terminate in recurved claws There are lice that parasitize mammals as diverse as walruses and elephants but only two genera normally infest man (and also the higher apes) chance infestations of man by pig and cow lice have been reported Those lice infesting man however are of universal distribution and found wherever people live in dirty and unhygienic surroundings They are included in the family Pediculidae characterized by the presence of eyes and a head not retracted into the thorax The two types of louse are *Pediculus humanus* and *Phthirus* (*Phthirius*) *pubis*

Pediculus —Members of this genus have a long abdomen (length about twice the width) and equally developed legs *P humanus* occurs in two forms or races namely



FIG 169.—*Pediculus humanus* var *corporis*

P humanus capitis the head louse which is smaller darker and has thicker antennae and more clearly subdivided thorax than has *P humanus corporis* (*vestimenti*) the second variety (Fig 169) The former is commonly found on the head and lays its eggs on the hairs the latter lives mainly in the seams of clothing in which it may lay its eggs The two forms however interbreed freely and one form will change to the other in four or five generations

Phthirus —A louse of this genus is distinguished by having an abdomen wider than it is long the forelegs are slender and terminate in a delicate claw the two posterior pairs of legs are stout and terminate in a strong claw *P pubis* is generally

particularly prevalent in South Asia and Africa. In the Cimicidae the wings are reduced to vestiges and the recurved piercing mouth parts lie in a ventral groove when not in use. The insect is actively motile but spends most of its life hidden in cracks and crevices, sallying forth periodically for a meal of blood. Eggs are laid in

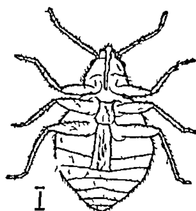


FIG 168 —♀ *Cimex lectularius* Ventral view

any suitably sheltered, usually dirty crevice, where they hatch into a small bug-like nymph which accompanies its relatives in the search for blood.

Other bugs, particularly tropical forms, may attack man. The Triatomidae, *Rhodnius* for example, are brightly coloured, actively flying bugs which attack animals and man, and some species have developed the habit of living in houses and behaving similarly to bed bugs. The Reduviidae (assassin bugs) are normally predacious on other insects, but will readily attack man in self defence, producing an extremely painful wound. As all Hemiptera have piercing mouth parts, many, including aquatic forms, are capable of injuring man. (The electric light bug *Belostoma* produces an envenomed bite the effects of which last several days.)

The bed bug is suspected of being the vector of several diseases, but there is little concrete evidence; the case against a number of the Triatomidae is much more fully substantiated. Little appears to be known about allergy and anaphylaxis in relation to bugs, but the symptoms which may appear after exposure to bites suggest that such a reaction occurs. The only sure protection is scrupulous cleanliness in houses and destruction of all bugs, and it must be borne in mind that bed bugs will often walk considerable distances from their resting place to obtain food. Insect deterrents will give some protection against the flying bugs and, as a temporary measure, against the bed bug. Disinfestation is best done by fumigation and properly used D D T and Gammexane are effective.

Order Anopleura

Lice are small, wingless ectoparasites of birds and mammals, showing great adaptation to their mode of life. Sense organs and appendages are reduced, mouth parts are modified and metamorphosis is not exhibited (the louse is exceptional among ectoparasites in that it breeds on the host).

vesicant Local skin injuries may also be inflicted by centipedes by the powerful grasping action of the legs

CLASS ARACHNIDA

The spiders and their relatives are characterized by four pairs of walking legs no antennae and the presence of internal air spaces (lung books) as organs of respiration The true spiders (order Araneida) usually show a clear division of the body into the cephalothorax bearing the four pairs of legs and also the mouth and its modified appendages (some associated with poison glands) and the unsegmented abdomen with spinnerets for web construction The jaws of a spider act as hypodermic needles injecting poison into the prey For the most part spiders are completely harmless but there are some whose bite is extremely toxic most of these latter belong to the genus *Latrodectus* (Europe Australia and tropical America) The bite of such a spider is followed by the rapid onset of acute pain alimentary disturbances fever and often paralysis The immediate symptoms are often followed by a skin rash which may recur after a considerable period It is likely (though not yet satisfactorily proved) that when a spider venom is introduced it acts as a toxin and results in the formation of a specific antitoxin injection of blood from a person who has recovered from a spider bite is stated to produce a diminution in the severity of the symptoms Some species of spider are believed to produce a vesicant secretion causing blistering when they are allowed to crawl over the skin

Order Scorpionida

The scorpions have a segmented abdomen with a terminal sting and a pair of mouth appendages modified to form large pincers They occur in warm parts of Europe Asia Australia and America The sting is rarely fatal to adult humans it may produce haemolysis paralysis and severe local reactions and swelling Little is known regarding the development of immunity to scorpion stings in man it probably occurs in desert animals and in man and animals antiserum is effective Mimicry of the scorpions is exhibited by numerous harmless arthropods such as the pseudoscorpions and the scorpion flies

Orders Pedipalpi and Solfugidae

Two orders of Arachnida similar to spiders and scorpions contain venomous members The Pedipalpi (India Africa and America) possess powerful pincers and an unsegmented abdomen with a well defined waist They give an envenomed wound but little is known about the stinging apparatus They are rarely observed owing to their shy disposition The Solfugidae (found in Europe Africa and America but not reported in Australia) for example *Galeodes* more closely resemble spiders and although they are widely regarded as venomous *no stinging* apparatus has been demonstrated It is possible that secondary sepsis of the wound that they cause accounts for their reputation

Order Acarina

The parasitic arachnids are contained in the order Acarina (ticks and mites) which includes many members of great importance to the dermatologist In general the body is flattened the abdomen is unsegmented there are no pincers or spinnerets and the lung books characteristic of the other orders are absent The mouth

found on the hair of the pubic and anal regions but may be found wherever the body is hairy and the coating not too dense, even in the eyelashes

Reproduction and infestation —In both forms of louse the egg hatches to produce a small organism resembling the adult, after three moultings it is capable of repro duction The young *Pediculus* has a shorter abdomen than the adult, and there is a superficial resemblance to *Phthirus*

During feeding, the louse injects saliva, and it has been shown that the resultant irritation is due to the secretion of the reniform gland The first bites do not cause much irritation but probably produce a sensitivity so that later bites cause marked irritation accompanied by a papular eruption and sometimes a widespread oedema There is no evidence that immunity can be obtained, and Buxton suggests that the apparent immunity of some individuals is due to their learning not to scratch Continued infestation by lice accompanied by scratching causes dermatitis, im petigo and inflammatory conditions of the skin aggravated by secondary infection and the introduction into scratches of the crushed bodies of lice There is evidence that organisms carrying impetigo can be carried by lice Very prolonged infestation may result in a general thickening and pigmentation of the skin, a condition called vagabond's disease, while the simultaneous attacks of numerous lice has been stated to produce general symptoms including pyrexia, a rash and pains in the joints

Summary of scientific study —Stimulated by the necessities of two wars, the study of lice and their control has been very fully documented, and for a summary of what is known the reader is referred to *The Louse*, by P A Buxton an admirable account giving full references to original work The scientific use of D D T and the application of biological knowledge to louse control in World War II prevented the widespread occurrence of lice that characterized World War I in one year of which as many as 10 per cent of the non lethal casualties were due to skin con ditions caused largely by lice

CLASS MYRIAPODA

The myriapods occurring almost universally are worm like organisms with a firm cuticle numerous pairs of legs no wings one pair of antennae internal air tubes and a marked external segmentation of the body They are subdivided into two orders the Chilognatha (millipedes) and the Chilopoda (centipedes) The former are scavengers living on vegetable detritus and possess no method of injecting poison The Chilopoda however possess powerful pincers associated with the mouth the pincers being perforated by the ducts of glands situated in their bases so that when the pointed pincers perforate the prey the poison secreted by the gland passes into the wound Most centipedes are harmless but some inflict a bite which produces a swelling the intensity of the pain and prolongation of the effects vary according to the season In winter the bite is not serious and any swelling disappears quickly but a bite during the spring produces considerable local inflammation and pain no marked allergic reactions, such as urticaria, have been reported

Both centipedes and millipedes possess segmental glands opening on the surface of the skin These secrete an odorous fluid which undoubtedly serves as a means of protection and in many millipedes and some centipedes the secretion is caustic and

vesicant Local skin injuries may also be inflicted by centipedes by the powerful grasping action of the legs

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parts are suctorial and adapted for piercing or biting Many acarines are to some extent parasitic, and great modification is exhibited by the highly specialized parasitic forms, such as *Demodex folliculorum* and *Sarcoptes scabiei* in which it is only with difficulty that arachnid characteristics are seen Acarines have a larval stage with three pairs of legs (instead of the usual four) followed by a nymph stage with four pairs during which stage there is a dormant period with an ecdysis resulting in the formation of the adult Many of the mites that obtain their food from plants have no direct effect upon man some however due to their habit of infesting food may produce important pathological effects

Family Tyroglyphidae

The mites which infest food are found mainly in the family Tyroglyphidae they are a millimetre or less in length and are frequently found in vast quantities in stored products They cause the familiar forms of dermatitis known as grocer s and baker s itch copra itch cottonseed itch and vanillism (cutaneous) They have no means of parasitizing man and the dermatitis they cause is due purely to the pathological action of their body substance and excretions, which undoubtedly produce an allergic reaction and are also very probably, themselves toxic Dust carried by the air from infected products can produce serious dermatitis The only satisfactory preventive is the destruction of the infested material During a nymphal stage the tyroglyphid and some other mites pass through an hypopus stage in which the mouth parts disappear the legs shorten and ventral suckers form whereby the mite attaches itself to a convenient insect for transport

Other parasitic mites

Other mites cause reactions in man as a result of their bites or both as a result of bites and a pathological reaction caused by their body substance and excretions Accidental, but nevertheless serious is the parasitism exhibited by mites of the genera *Liponyssus Dermanyssus* and *Pediculoides* The first a rat parasite often causes severe irritation to man in rat infested dwellings the second is a parasite of poultry and pigeons both readily attack man and as they feed quickly and retire are difficult to trace The third parasitizes the insects of stored foods, deprived of its favourite insect food it will attack man and the bites probably fortified by the toxic nature of the *Pediculoides* itself and an allergic reaction to it may produce a general rash (grain shoveller s itch) and asthma Gammexane has been found to be useful in the control of such mites

Family Trombidiidae

Of the mites that infest man some do so only in the larval stages others are predatory or parasitic solely as adults the rest are parasitic throughout their life history Of those that are predatory on man during the larval stage the characteristic examples are found in the family Trombidiidae These harvest mites (red bugs or chiggers) as adults, are harmless eight legged mites (red spider) which feed on other small organisms, vegetable matter or debris The six legged larva that hatches from the egg is minute (0 1–0 2 millimetre) and lies in wait for a suitable vertebrate Those that infest man on making contact move rapidly to a suitable place (usually where the clothing is constricted) and settle down Saliva possibly venomous, is injected into the skin and breaks down the cells finally hardening peripherally to form a tube through which the mite can withdraw blood and lymph

When fully gorged often after several days the mite is clearly visible it drops off and after a number of changes develops into the adult in a few weeks Contrary to popular opinion harvest mites do not burrow into the skin A severe dermatitis may be caused immunity may develop after prolonged exposure to bites and even apparently immunity to the mites themselves (Antibody has been demonstrated in rabbits exposed to ear lobe mite) Sulphur or pyrethrum dusted on the legs and inside the socks acts as a deterrent and after exposure to bites an alkaline bath (soda or ammonia) gives relief

Superfamily Sarcoptoidea

A greater degree of parasitism is exhibited by members of the superfamily Sarcoptoidea an example is *Sarcoptes scabiei* the itch mite that produces scabies It is minute (0 1-0 2 millimetre) without eyes or specialized respiratory organs and with reduced legs The female after impregnation burrows into the epidermis forming winding tunnels in which eggs and excrement are deposited Several eggs are laid each day for about six weeks after which the mite dies The eggs hatch the larvae start to burrow and after about two weeks become adult when they may be found wandering on the skin Copulation probably occurs during this period and the female then recommences the life cycle Small blisters which do not house mites occur as well as tunnels The mite is best obtained by microscopic examination of material scraped from the internal end of a tunnel Infection is by contact or more rarely from infested clothing or bedding Intense itching does not appear until about a month after the initial infection prolonged infection produces a sharp reduction in the number of mites but no relief of the skin symptoms On the contrary the lesions become more widespread and secondary infections often lead to impetigo No immune response has yet been demonstrated Varieties of *S scabiei* from the llama camel horse goat and monkey can infest man that from the dog gives a transitory infestation

Family Demodicidae

Very marked parasitic modification is seen in the mites of the family Demodicidae These mites occur in the hair follicles and sebaceous glands of many mammals in man *Demodex folliculorum* occurs mainly on the face The body (0 3-0 4 millimetre) is worm like and the legs stumpy and restricted to the anterior end *Demodex* provides an excellent example of a succe sful parasite in that it lives at the expense of its host man without doing any apparent harm or causing irritation thus its presence is often unsuspected and it is allowed to live undisturbed Secondary infections have been reported and *Demodex* has been suspected of playing a part in the transport of leprosy and the causation of epitheliomas and dermatitis in the dog a fatal mange sometimes results from parasitism from *Demodex*

Families Ixodidae and Argasidae

The remaining acarines to be considered are usually called ticks (Fig 170) They are in general very much larger than the other acarines The Ixodidae are characterized by great hardening of the cuticle particularly dorsally (hard bodied ticks) while the part of the body bearing the mouth parts projects *forwards and*

parts are suctorial and adapted for piercing or biting Many acarines are to some extent parasitic and great modification is exhibited by the highly specialized parasitic forms, such as *Demodex folliculorum* and *Sarcoptes scabiei* in which it is only with difficulty that arachnid characteristics are seen Acarines have a larval stage with three pairs of legs (instead of the usual four) followed by a nymph stage with four pairs during which stage there is a dormant period with an ecdysis resulting in the formation of the adult Many of the mites that obtain their food from plants have no direct effect upon man some however due to their habit of infesting food, may produce important pathological effects

Family Tyroglyphidae

The mites which infest food are found mainly in the family Tyroglyphidae they are a millimetre or less in length and are frequently found in vast quantities in stored products They cause the familiar forms of dermatitis known as grocer s and baker s itch copra itch, cottonseed itch and vanillism (cutaneous) They have no means of parasitizing man and the dermatitis they cause is due purely to the pathological action of their body substance and excretions which undoubtedly produce an allergic reaction and are also very probably themselves toxic Dust carried by the air from infected products can produce serious dermatitis The only satisfactory preventive is the destruction of the infested material During a nymphal stage the tyroglyphid and some other mites pass through an hypopus stage in which the mouth parts disappear the legs shorten, and ventral suckers form whereby the mite attaches itself to a convenient insect for transport

Other parasitic mites

Other mites cause reactions in man as a result of their bites, or both as a result of bites and a pathological reaction caused by their body substance and excretions Accidental but nevertheless serious is the parasitism exhibited by mites of the genera *Liponyssus Dermanyssus* and *Pediculoides* The first a rat parasite often causes severe irritation to man in rat infested dwellings the second is a parasite of poultry and pigeons both readily attack man and as they feed quickly and retire are difficult to trace The third parasitizes the insects of stored foods deprived of its favourite insect food it will attack man and the bites probably fortified by the toxic nature of the *Pediculoides* itself and an allergic reaction to it may produce a general rash (grain shoveller s itch) and asthma Gammexane has been found to be useful in the control of such mites

Family Trombidiidae

Of the mites that infest man some do so only in the larval stages others are predatory or parasitic solely as adults the rest are parasitic throughout their life history Of those that are predatory on man during the larval stage, the characteristic examples are found in the family Trombidiidae These harvest mites (red bugs or chiggers) as adults are harmless eight legged mites (red spider) which feed on other small organisms vegetable matter or debris The six legged larva that hatches from the egg is minute (0 1–0 2 millimetre) and lies in wait for a suitable vertebrate Those that infest man on making contact move rapidly to a suitable place (usually where the clothing is constricted) and settle down Saliva possibly venomous is injected into the skin and breaks down the cells finally hardening peripherally to form a tube through which the mite can withdraw blood and lymph

CHAPTER 24

DRUG ERUPTIONS

G A GRANT PETERKIN

TYPES OF DRUG ERUPTIONS

IT IS AN old but true axiom that in considering the differential diagnoses of any skin condition one must always keep in mind the possibility of the manifestations being due either to syphilis or to a drug In the strict sense one considers a drug eruption to be due to the actual absorption of the drug throughout the system by means of oral rectal or percutaneous administration by injection or by inhalation but not the actual chemical reaction of the skin itself to an external irritant which should be termed dermatitis venenata contact eczema or some such name It should be noted that some drugs for example the sulphonamides are liable to cause contact eczema if applied locally and that there may be a recurrence of this eczema if the drug is administered *via* another route

Drugs can produce cutaneous lesions which may mimic closely almost any known skin disease for example such diverse conditions as acne erythema multiforme lichen planus psoriasis lupus erythematosus scarlet fever smallpox and malignant tumours so that a most careful and patient history must be taken to elicit the complete history

Many eczematoid reactions take the appearance of a contact dermatitis a post traumatic infective eczema an atopic eczema or a neurodermatitis so that the appearance may be associated with erythemato papular erythemato vesicular erythemato squamous or weeping eruptions Among the drugs which may cause these are sulphonamides arsenic gold mepacrine hydrochloride quinine penicillin ephedrine and cocaine derivatives

Urticarial reactions with or without angioneurotic oedema or sometimes the latter alone can be caused by penicillin sulphonamides salicylates phenolphthalein barbiturates arsenic cocaine derivatives iodides bromides and sera

Morbilliform rashes can be produced by many drugs but most frequently by sedatives of the barbiturate group sulphonamides and salicylates Scarlatiniform rashes are generally caused by the same drugs as are the morbilliform eruptions and also by arsenic mepacrine hydrochloride and sera

Vesicular eruptions are somewhat unusual and may look extraordinarily like smallpox they are caused by iodides bromides and sulphonamides

Bullous or pemphigoid lesions may be provoked by iodides bromides and sulphonamides and should be kept under close observation as some prove fatal and others develop into a true pemphigus vulgaris A bullous fixed drug eruption with its characteristic appearance may occur after the exhibition of sulphonamides antipyrin or phenolphthalein

can be seen when the tick is regarded from above In the Argasidae the integument is leathery (soft bodied ticks) and the mouth parts are ventral and cannot be seen from above All ticks are ectoparasitic and many are capable of biting man most of them feed twice during their life history The six legged larva that hatches from

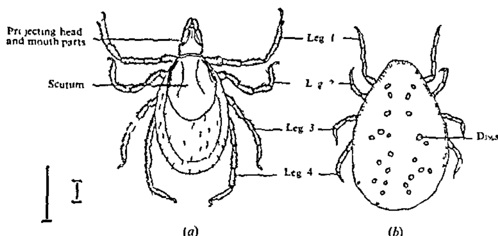


FIG 170 —Dorsal view of (*a*) ixodid tick and (*b*) argasid tick The size increases with engorgement approximate limits are shown by the ruled lines

the egg awaits a suitable host and after gorging (which may take several days) drops off and changes to an eight legged nymph that requires another meal before it can reach sexual maturity In some cases the tick remains attached to the host during the moults, minimizing the danger of starvation The Argasidae which in general live in closer proximity to the host, have less fixed feeding habits Tick bites are liable to become infected, and when a tick is removed roughly the mouth parts usually remain in the wound such wounds often lead to extensive ulcers blood poisoning and not infrequently to death A powerful toxin has been demonstrated in the saliva of some ticks Paraffin oil is a deterrent and also facilitates removal of the tick without damage

Apart from causing skin lesions and dermatitis the acarines by the injection of saliva, act as vectors for a multitude of diseases The occurrence of mites as endo parasites though frequently reported is still open to doubt and in many cases the infection is due to inadequate precautions during investigation

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size of a coin to that of a palm recurring on various parts of the body and accompanied by an itching or burning sensation The patches were dusky red at their onset and showed definite borders At times these lesions progressed to form bullae Desquamation or crusting (after the bullous lesions) appeared as the eruption faded leaving a pigmentation of variable shade and duration on the areas affected A special tendency of the eruption was the tendency to relapse and recurrence of the lesions *in situ* The name in fact refers to the tendency for the eruption to recur on the areas previously affected and not to the duration of the condition

The localization of the plaques may be on the site of an old injury to the skin for example a scar or of a coexisting disease such as a dermatophytosis or eczema but as a rule there appears to be no determining cause for the site Any part of the skin may be affected and lesions (often bullous) may occur on the mucous membranes genitalia or anal region particularly with sulphonamides

The following drugs may cause a fixed drug eruption approximately in order of frequency phenolphthalein sulphonamides antipyrin barbiturates quinine arsenicals salicylates bromides iodides mercury bismuth (by injection) penicillin and Atophan

DIAGNOSIS

A drug eruption may be a slow insidious process such as may follow prolonged arsenic medication or the taking of bromides over a long period but more often it is explosive in character and the skin reaction appears within minutes or hours of the ingestion of drugs such as quinine or the sulphonamides

As a rule the sensitivity of the patient to the drug persists throughout life but occasionally the skin ceases to react again to the noxa so that the failure of the drug to reproduce the rash in the same individual does not prove by any means that the particular drug did not cause the eruption Likewise the fact that the patient gives a history of having taken a particular preparation or even that a certain drug can be demonstrated in the patient s tissues or circulation by no means indicates that this is the cause of his rash

Skin tests should never be relied upon in a dermatosis in which a medicament is suspected as the cause as more often than not a negative reaction is obtained though a true positive is more likely to be obtained in an eczematous type of rash

It will therefore be seen that it is very easy to suspect that a drug is causing an eruption but more difficult to prove it In most cases of course withdrawal of the drug will be followed by speedy improvement but this does not apply to certain types for instance in gold and mepacrine hydrochloride dermatitis the rash does not disappear for months after the drug is discontinued

Fortunately we now have a considerable amount of knowledge which helps us to make an accurate diagnosis and with experience one can often determine speedily that a skin trouble is due to a drug and that a certain drug is the most likely cause of it Despite the increasing number of medicines on the market today the vast majority of drug rashes are caused by drugs in common use so that these should be considered before other rarer ones are suspected

Purpuric rashes are not uncommon and can be due to many different drugs, for example sulphonamides arsenic, Sedormid iodides *quinine salicylates and* thiopentone

An exanthem closely *mimicking erythema multiforme* can be produced by sulphonamides, phenolphthalein, salicylates, antipyrin or barbiturates

Erythema nodosum can be simulated by eruptions produced by sulphonamides salicylates or iodides It appears particularly following the administration of *sulphathiazole for gonorrhoea*

Lupus erythematosus, either disseminated or discoid, may be imitated by reactions to several drugs, for instance sulphonamides and mepacrine hydro chloride It may be significant that sulphonamides provoke this reaction chiefly when used for pulmonary diseases

Lichenoid eruptions and those simulating lichen planus form one of the most interesting groups For years it has been known that arsenic and gold injections could produce lesions almost indistinguishable from lichen planus or lichen ver rucosus while more recently in many of the cases of mepacrine hydrochloride drug eruptions the same manifestations appeared

Psoriasiform lesions may sometimes be observed after the administration of gold arsenic and mepacrine hydrochloride with a histological picture indistinguishable from psoriasis More often, however the appearance is that of one of the forms of parapsoriasis

Keratotic forms may be produced by arsenic and by mepacrine hydrochloride

Erythroderma and exfoliative dermatitis can be provoked by many chemicals such as sulphonamides, arsenic mepacrine hydrochloride, gold phenolphthalein barbiturates and others

Acneform or furunculoid rashes are most commonly due to iodides and *bromides but other drugs such as the sulphonamides have been* responsible in a few cases

Granulomatous lesions which may resemble malignant tumours *or granuloma* pyogenicum have been produced by iodides and bromides ulcerative forms not *unlike syphilitic or tuberculous ulcers may also be provoked by* bromides and iodides

Melanodermia consisting of deep pigmentations of the skin and *mucous mem* branes and generally associated in the other forms of drug rashes has been induced by arsenic gold *mepacrine hydrochloride and quinine*

Pruritus with no visible skin lesions is a not uncommon manifestation of intoler ance to a drug such as Luminal phenolphthalein or penicillin

Erysipelas like swellings are generally due to the injection of such drugs as peni cillin mersalyl and Novasurol In the fixed drug eruption the reaction *as first* noted by Brocq (1894) was caused by antipyrin but nowadays phenolphthalein is by far the most common cause An authoritative article on *fixed drug eruptions by* Abramowitz and Noun (1937) gives full information regarding this phenomenon and the authors summarize Brocq s *original description as follows* The cutaneous manifestations appeared as round or oval apparently oedematous plaques from the

such as contact dermatitis and eczema of the hands but also may be responsible for urticarial scarlatiniform and morbilliform dermato es A close questioning will reveal that the patient has taken aspirin or a headache powder prior to each outbreak

Quinine

Considering the number of men who were treated with quinine for malaria it is amazing how few developed an idiosyncrasy to it Of those patients who reacted to quinine and were seen by the author in malarial areas most gave a history of



FIG 17? —Bullous fixed drug eruption due to Soneryl The patient also reacted to bromides

reactions due to the drug—in quinine pessaries quinine urethane *injections* cold cures and even quinine tonic water The rashes are usually erythematous and urticarial with marked oedema but often they take an eczematous form thus contact dermatitis of the penis due to quinine pessaries would recur with oral administration Rarer manifestations are fixed drug eruptions pemphigoid and purpuric rashes and even melanodermia which may be localized to the mucous membranes

Sulphonamides

Sulphonamides have been responsible for a vast number of eruptions of many varied types In a series of 500 cases the following kinds were observed by Peterkin (1945)

These drugs as a rule produce skin changes which are either obvious drug rashes or eruptions similar to other dermatoses but often with certain essential differences

COMMON DRUG ERUPTIONS

The commonest causes of drug eruptions are as follows phenolphthalein sedatives, especially barbiturates and urea derivatives salicylates, quinine, sulphonamides, penicillin gold arsenic mepacrine hydrochloride iodides and bromides

Phenolphthalein

Phenolphthalein is one of the most commonly used purgatives especially in proprietary medicines so that minute particulars of all such preparations should be obtained in the history The drug may be taken in the form of emulsions such as Agarol, Petrolax or Petrolagar with phenolphthalein, pills or tablets such as Isolax Constipon Castorets Alophen Simpson Seaweed and Celery Tablets G S Brand Tablets, K 12 Regulators Kest Brand Compound Epsom Salts Tablets Medilax Purgoids Simodine Trilax Vericolate or pastilles, chocolate laxatives or chewing gum such as Analax Bonomint, Brooklax Ex Lax, Laxobac or Teddylax



FIG 171 —Fixed drug eruption caused by phenolphthalein in a chewing gum laxative

Considering the number of people who partake of these laxatives the proportion of those who develop an idiosyncrasy to phenolphthalein is extremely low there has, however, been a slight though definite increase in the number of rashes caused by the chewing gum or chocolate type of purgative since the introduction of rationing (*see* Fig 171)

Phenolphthalein can cause many different types of rash including eczema and pemphigoid reactions urticaria erythema multiforme and most characteristic of all, the fixed drug eruption

Barbiturates and urea derivatives

Sedatives such as barbiturates and urea derivatives probably are responsible for more drug eruptions than are any other medicaments but dermatologists do not see these cases as often as the physicians who prescribe the sedatives and who realizing the signs of intolerance stop the medicine As a rule they cause morbilliform scarlatiniform and urticarial rashes, but occasionally they produce fixed drug eruptions erythema multiforme and bullous or purpuric lesions (*see* Fig 172)

Salicylates

Salicylates, for example sodium salicylate aspirin and salicin have an exasperating tendency to provoke lesions which closely simulate many types of eczema

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Photo sensitization—This is localized to areas exposed to light and it may occur (1) in a mild form, as an erythemato papular rash magenta in colour (*see* Plate IV) (2) as a pustular eruption not infrequently mistaken for smallpox (3) in the severe type is a bullous crusted and exudative eruption with gross septic infection and (4) in a chronic form showing telangiectases with islands of impetiginous crusting

Morbilliform eruption—This appears as a generalized itchy rash, magenta in hue

Scarlatiniform eruption—An eruption of this type is usually generalized but sometimes appears in plaques

Erythema multiforme—An eruption of this type often occurs after treatment of throat infections

Erythema nodosum—The use of sulphathiazole in gonorrhoea is often followed by an eruption of the erythema nodosum type

Lupus erythematosus—This form of eruption is usually found in patients treated for pulmonary conditions such as pneumonia or chest wounds

Fixed drug eruption—This may be dusky purple in colour leaving deep pigmentation, or with bullae It tends to occur particularly inside the mouth or on the penis

Purpuric eruption—Occasionally a generalized purpuric rash appears after oral administration of a sulphonamide

Pemphigoid eruption—This is a rare manifestation which closely resembles pemphigus vulgaris and has proved fatal

Acneform or furunculoid lesions—These are more often produced by local application of the sulphonamides than by their oral administration and are definitely uncommon

Exfoliative dermatitis—Exfoliative dermatitis may occur and sometimes looks not unlike pemphigus foliaceus *Pseudomonas pyocyanea* seems to be responsible for the latter type

Dermatitis—Contact eczema may occur either as (a) a type showing flaccid superficial bullae and shallow scooped out ulcers (*see* Plate V) which is first caused by local applications and reactivated by oral administration or (b) a purpuric type which is usually localized to the area of contact but may be reproduced by giving tablets Other forms which may be produced are infectious eczematoid dermatitis, disseminated neurodermatitis circumscribed neurodermatitis and seborrhoeic dermatitis

Psoriasiform type—This type of eruption was reported by Philpott (1947)

The sulphonamide eruptions may be accompanied by general toxaemia and a high temperature especially in cases in which there is photo sensitization of either the pustular or the severe bullous type in morbilliform or scarlatiniform rashes in pemphigoid eruptions and in exfoliative dermatitis Any of the sulphonamides can produce a drug reaction but sulphanilamide and sulphathiazole have been responsible for the vast majority though even sulphaguanidine and Sulfasuxidine have been incriminated It should be remembered that related chemicals like acriflavine



Sulphonamide eruption

PLATE IV



Sulphonamide contact dermatitis

PLATE V

and cocaine may provoke a recurrence and that the patient may tolerate a different sulphonamide such as sulphadiazine perfectly well

Sensitization often remains for years and the strongest argument against the local application of sulphonamides is the number of patients who have developed a sensitivity to these and for months or years have been afflicted with intolerance to sunlight or with a chronic severe eczema which is singularly unresponsive to therapy

Penicillin

Penicillin reactions are by no means uncommon apart from the frequent contact dermatitis caused by the drug or its vehicle Generally intolerance manifests itself in the form of a giant urticaria which tends to occur about 10 days after the injections and which may be severe and accompanied by joint pains or general anaphylaxis Lyons (1943) noticed 12 cases in 209 patients treated with the drug In a patient whose skin has been sensitized by the local application of penicillin injection of the drug may but often does not produce a recurrence of the dermatitis or an urticarial reaction

Sometimes intolerance reveals itself by an eczematous eruption such as that described by Oberst and Murray (1946) by the reactivation of a quiescent fungus infection of the feet or groins as noted by Feinberg (1944) or less common still



FIG 173 —Erysipelas like reaction at the site of an injection of penicillin

by an erysipelas like swelling around the site of injection without any other upset (*see* FIG 173) or rarely hyperpyrexia with joint pains probably due to a pyrifer impurity in the preparation

Gold

Gold injections used in the treatment of diseases such as rheumatoid arthritis lupus erythematosus and tuberculides not infrequently are responsible for severe drug eruptions which may assume many different forms These are often precisely the same as the reactions caused by mepacrine hydrochloride and the arsenicals though gold eruptions most often commence as a fine papular rash on the

extensor aspects of the forearms or legs perhaps remaining as such perhaps becoming an extensive weeping eczema or an exfoliative dermatitis Frequently the folds of the body and the scalp are afflicted by an intractable seborrhoeic dermatitis or a generalized phrynodermia with follicular hyperkeratoses, not unlike a pityriasis rubra pilaris or a dermatosis of the lichen planus type with lichen lesions on the mucous membranes Pigmentary changes are common usually producing a patchy lilac or purple discoloration which may be preceded by a rash similar to pityriasis rosea, but sometimes by a melanosis either generalized or located in the buccal mucous membranes Rarely gold seems to provoke erythematous patches with scarring indistinguishable clinically and histologically from lupus erythematosus Sudden exacerbation of a pre existing psoriasis is occasionally noted as well as eczematization of psoriatic patches

Arsenic

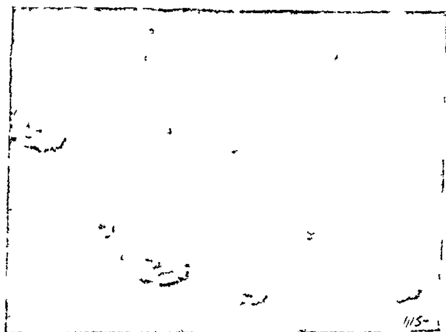
Arsenic eruptions depend to a large extent on the manner in which the drug is prescribed that is, whether it is an inorganic or an organic arsenic

The organic preparations most often administered are liquor arsenicalis Asiatic pill and Liquor Arseni Acidus, though these are not prescribed nearly so frequently as formerly Most patients tolerate these drugs well in therapeutic doses though a few develop swelling of the eyelids gastro intestinal symptoms and nephritis Their long continued administration however, leads to the typical dappled pigmentation keratosis palmaris et plantaris small warty keratoses especially of the limbs face and neck, and finally to basal cell or squamous cell carcinoma which on occasion looks not unlike Bowen s disease

Inorganic preparations are generally given in such a form as neoarsphenamine or Mapharsen but it should not be forgotten that arsenic is used for amoebic dysentery for example as Devegan or Stovarsol or as Devegan or Stovarsol vaginal tablets for the treatment of trichomonal infection The inorganic drugs can cause dermatoses of many differing kinds—acute eruptions which may be erythematous eczematous exfoliative dermatitis, vesicular bullous urticarial purpuric, like erythema multiforme or exactly like the gold reactions mentioned in the previous section Herpes zoster not infrequently occurs In chronic cases pigmentation lichenoid patches and keratoses are common

Mepacrine hydrochloride

Mepacrine hydrochloride (Atabrine or Quinacrine) is prescribed in the treatment of malaria for prophylaxis of this disease and occasionally for infection with *Giardia lamblia* but the cessation of World War II and the introduction of Paludrine should soon relegate the bizarre eruptions produced by this drug to the status of a dermatological curiosity At the present time however it is not uncommon to see an example in a patient lately returned from India the Far East or Africa Rashes due to this drug such as exfoliative dermatitis were described before 1939 but in 1943 severe and peculiar eruptions were observed more or less simultaneously in the Pacific and Mediterranean areas in troops who were taking mepacrine hydrochloride as a suppressive for malaria The dermatosis often began on areas of skin already affected by cutaneous diseases such as epidermophytosis and



Early stages of mepacrine hydrochloride rash showing purple plaques and follicular hyperkeratosis

PLATE VI

seborrhoeic dermatitis feet and hands were frequently the first sites In the early phases the eruption often started as an acute vesicular bullous or erythemato squamous rash sometimes like seborrhoeic dermatitis or pityriasis rosea but usually associated with a characteristic deep purple pigmentation which occurred as oval plaques much the same as but much more extensive and striking than the patches of pigmentation sometimes occurring after injections of gold and arsenic Gradually these plaques developed into nodular areas indistinguishable from lichen planus hypertrophicus so that the condition was sometimes termed tropical lichenoid dermatitis The lips tongue and buccal mucous membranes were often affected first by vesicular bullous or squamous lesions and finally by white patches similar to lichen planus Many patients had marked follicular hyperkeratosis so that their skins were rough and horny with an appearance not unlike pityriasis rubra pilaris Similarly the scalp was sometimes affected by a patchy baldness exactly like the lichen plano-pilaris of Graham Little

In other cases the skin had the deep yellow pigmentation due to mepacrine hydrochloride but no rash was present although there was deep purple staining of the nails hard palate nose and even the teeth

The lichenoid eruption and the pigmentation tends to remain for several months before slowly disappearing occasionally leaving scarring if the dermatosis was complicated by severe sepsis (*see* Plate VI)

Iodides

Iodides are commonly ingested as cough mixtures asthma cures and blood purifiers such as Clarke s Blood Mixture Iodides can produce a great variety of skin eruptions some of which may prove fatal to the patient—a point which should always be borne in mind

The most characteristic rash due to iodides is *acneform with a distribution* sometimes similar to acne vulgaris but a generalized erythemato pustular eruption is not uncommon Like many other drugs the iodides can also produce eczematous outbursts purpuric vesicular urticarial and bullous lesions but like the bromides are particularly apt to cause large granulomatous tumours with ulceration which may resemble malignant diseases such as sarcomatosis and mycosis fungoides gummatous syphilis cutaneous tuberculosis or granulomas such as blastomycosis Those types which are liable to result in death are the granulomatous purpuric bullous and severe pustular rashes (*see* Fig 174)

Bromides

Bromides produce dermatoses very similar to those caused by iodides but have an even greater tendency to produce fungating tumour like masses (*see* Fig 175) It should be borne in mind that some bromide intoxications can also cause the death of the patient

Some combinations of bromides with other drugs can cause a distinctive rash which is diagnostic for example Theominal produces a discrete papulo-pustular rash which becomes purpuric and fading leaves a typical patchy brown pigmentation

Besides these drugs the effects of which have already been noted many others are capable of causing reactions Of these the following may be mentioned briefly

Ephedrine

Ephedrine rarely causes a dermatosis after oral administration, but one is occasionally observed after the use of this drug as intranasal drops or sprays when



FIG 174 —Iodide eruption

the sensitivity first appears as an eczematous eruption of the face especially round the nose and mouth followed by an explosive erythemato squamous dermatitis affecting most of the body Fortunately this heals rapidly on withdrawal of the drug

Morphine

Morphine can affect the skin in several different ways In workers in the morphine department of chemical factories it generally starts as an acute contact dermatitis of the exposed areas with marked oedema of the eyelids Repeated



FIG 175 —Bromide eruption

exposure leads to a generalized erythematous dermatitis often accompanied by spasmodic rhinorrhoea In patients to whom morphine is given by mouth or by injections erythemas are most often seen but the morphine addict may be subject to an intense general pruritus of an intractable nature perhaps with pronounced formication

Atropine

Atropine on occasions produces a rash which is generally of an erythematous or urticarial nature though other types have been reported

Insulin and protamine zinc insulin

Eruptions caused by insulin and protamine zinc insulin have been reported on rare occasions they are usually of an erythematous or urticarial type

Pentothal Sodium

Pentothal Sodium given intravenously seldom causes a drug rash but has been responsible for urticarial morbilliform and purpuric lesions

TREATMENT

Prevention is better than cure and undoubtedly many cases of drug eruptions are preventable It is astounding how often the patient says I told the doctor I had been given that drug before and it brought me out in a rash and the doctor ignores the patient s story with deplorable results This applies particularly to sulphonamides, penicillin and barbiturates Sometimes of course the indications for the exhibition of a drug are so compelling that it is necessary to risk the consequences but frequently a substitute could have been employed just as successfully thus people sensitized to one sulphonamide may tolerate another, such as sulphadiazine though polysensitivity is not unusual

The first principles in the treatment of drug rashes are to ensure that the suspected drug is stopped immediately and that every available measure is taken to prevent its absorption and to aid its excretion for example by cleansing of the skin by washing out the body cavities if necessary, and by the use of BAL (British Antilewisite) It should be borne in mind that the effect of withdrawing the drug may be observed perhaps within 24 hours as in an erythematous reaction due to barbiturates or perhaps not for several months, as with gold arsenic and mepacrine hydrochloride

Once this has been done it is important to avoid as far as possible all powerful or potentially irritating remedies as the duration of the eruption is only too often prolonged by injudicious treatment As a general rule local applications should be those indicated for the disease that the reaction resembles a weeping eczematous rash should be treated by means of a soothing mildly astringent dressing such as compresses of Burow s solution, and treatment of an acneform eruption should be on the lines of that for acne vulgaris

General principles of treatment

In minor cases of drug rashes the patient can often continue his normal mode of life and it is sufficient merely to cease the administration of the suspected drug If however the eruption is extensive or is causing toxic effects complete rest in bed is advisable and every effort should be made to eliminate the drug by keeping the bowels open by giving fluids copiously—6–7 pints of water orange squash or other fluids daily—and by a light easily digested diet

Except for certain measures which will be referred to later, efforts to neutralize the drug in the tissues to aid its excretion, or to raise the resistance of the body to its effect are generally useless and may be apt to retard rather than assist the recovery of the patient, an example of this is the sodium thiosulphate treatment for arsenical dermatitis

Vitamin therapy has enjoyed a vogue and in some cases does seem to aid the recovery of the patient Vitamins A and D are especially indicated in eruptions due to arsenic, gold and mepacrine hydrochloride which often cause the skin to be dry and scaly with follicular hyperkeratosis while vitamin B complex often best administered in the form of injections of crude liver is sometimes beneficial in many kinds of drug rashes, particularly those associated with angular stomatitis cheilitis and photo sensitivity At one time ascorbic acid was freely used orally and parenterally, for arsenical dermatitis but it has somewhat fallen out of favour It can be

used for purpuric eruptions in conjunction with vitamin K analogue given orally or by injection While it is advisable to give these vitamins in massive doses it must be borne in mind that overdosage for example of calciferol may produce toxic effects

Antihistamine drugs like Lertigon Benadryl Antistin and Anthisan are often successful in relieving the symptoms in an urticarial reaction and in a minor percentage of cases give relief from itching in other dermatoses due to drugs though they too can cause unpleasant side effects and may even produce an erythemato papular rash

Treatment of particular reactions

Eczematoid reactions should be treated as eczema according to the type

Urticarial reactions can be controlled by antihistamine drugs such as Benadryl antipruritic lotions medicated baths and so on Morbilliform scarlatiniform and vesicular reactions usually soon subside with simple antipruritic treatment

Bullous eruptions are best treated rather like pemphigus by means of 1 per cent gentian violet wet dressings of 0 5 per cent silver nitrate or a tannic acid spray The pemphigoid type of sulphonamide rash responds well to injections of penicillin

Purpuric eruptions are not influenced by local therapy but the condition may be improved by the administration of vitamin K analogues (menaphthone 5 milligrams by injection or acetomenaphthone 2 milligrams thrice daily by mouth) and natural vitamin C preparations such as rose hip syrup and blackcurrant juice

Erythema multiforme requires only a simple lotion such as Ichthyol 60 grains in calamine lotion 6 ounces Erythema nodosum due to drugs is not usually painful enough to warrant any local treatment Lupus erythematosus caused by medicaments is suitably treated by Ichthyol and calamine lotion Lichenoid *eruptions* disappear very gradually when the causative drug is stopped x rays are sometimes useful in treating localized patches Psoriasiform eruptions should be treated as acute psoriasis and great care should be taken not to apply strong ointments Keratotic lesions are improved by x ray therapy and keratolytics such *as 5 per cent* salicylic acid in Vaseline Treatment of erythrodermia and exfoliative dermatitis must be sedative 1 per cent Ichthyol paste or plain zinc ointment may be prescribed with skilled nursing and complete rest in bed Acneform or furunculoid rashes require much the same therapy as for acne vulgaris or furunculosis Granulomatous reactions tend to disappear with the discontinuance of the drug responsible as do the ulcerative forms Melanodermia due to drugs often persists for months or years after the cessation of the drug carbon dioxide snow is useful for removing pigmented patches which are unsightly Pruritus and erysipelas like swellings subside within 7–14 days Fixed drug eruptions fade steadily and leave a brown pigmentation which may persist for many months

Treatment of particular drug eruptions

Phenolphthalein

Phenolphthalein rashes usually soon subside once the patient ceases to ingest the drug In the most common phenolphthalein reaction—fixed drug eruption—

continuation of the medicine may lead to diminishing sensitivity to it but this does not occur in most cases Within 7–14 days of stopping the drug the dusky red patches fade, leaving a dull brown pigmentation The persistence of this discoloration depends on the duration of the plaques as a rule No local applications are indicated for the average phenolphthalein eruption

Barbiturates and urea derivatives

Sedatives of the barbiturate or urea groups usually produce rashes which soon subside once the cause is recognized All that is ordinarily required for an urticarial or erythemato papular rash is an antipruritic lotion such as one of the following

Phenol – – – –	60 gr
Calamin – – – –	180 gr
Glycer – – – –	120 min
Milk of Magnesia – – –	ad 6 oz

Liq Plumb Subacet Fort – –	10 0
Liquor Carbonis Detergens – –	10 0
Pulv Zinc Oxid – – –	20 0
Glycer – – –	20 0
Aq Dest – – –	ad 200 0

The lotion should be thoroughly shaken, some poured into a saucer or small bowl and dabbed on with a pledget of cotton wool as often as required

For weeping eczematous areas wet dressings such as normal saline solution compresses are indicated silver nitrate 0 25–0 5 per cent or Burow s solution may be applied night and morning with a jaconet backing

Salicylates and quinine

Salicylate and quinine eruptions require similar methods of treatment and usually disappear speedily

Sulphonamides

Treatment of sulphonamide rashes depends upon their type and severity Only three may produce either grave or prolonged disability—the pemphigoid eruption the sulphonamide light eruption, and contact dermatitis with its various manifestations The others soon subside with antipruritic treatment and rest but these three may require weeks of hospital treatment Fortunately, the pemphigoid kind generally responds rapidly to penicillin therapy

The sulphonamide light rash and contact dermatitis must be treated at first with wet dressings and when the exudation is under control, a paste dressing is applied on spreads of old linen or washed bleached calico night and morning The most suitable applications are Lassar s paste 1 per cent Ichthyol paste and particularly in these cases, a preparation such as the following

Hydrarg Ammon –	20 gr
Pulv Zinc Oxid –	240 gr
Pulv Amyli	240 gr
Paraff Moll	4 oz

Tar preparations should never be used in patients with photo-sensitivity but in the later scaly stages a 2 per cent resorcin paste can sometimes be used with benefit Those in whom light sensitivity is suspected should be nursed in a darkened room and gradually subjected to increased exposure to daylight When they are able to tolerate an hour s exposure to direct sunlight they can be discharged from hospital with a preparation which gives a certain amount of protection from sunlight as Skol oil or

Acid Tann	–	–	–	–	180 gr
Trag			–	–	24 gr
Glycer	–	–	–		1 oz
Aq Dest		–	–	–	8 oz.

Patients can be desensitized to sulphonamides by the administration of the drug in minimal and increasing doses as described by Tate and Klorfajn (1944) but this procedure should be employed only in hospital and by a doctor fully conversant with the method

Penicillin

Reactions which are generally urticarial in type tend to subside in about 10–14 days without treatment but the itching is often so severe that every effort must be made to control it Antihistamine preparations such as Benadryl and Antistin are strongly indicated and often give considerable relief

Gold arsenic and mepacrine hydrochloride

Eruptions due to these drugs were considered the most refractory and chronic until the introduction of BAL which appears to be effective in most cases of metal poisoning It is administered suspended in benzyl benzoate by intramuscular injection the dose being 3 milligrams per kilogram of body weight per injection in severe cases and 2 milligrams per kilogram in milder cases As toxic effects are not uncommon it should be given in hospital by those accustomed to its use

Local treatment d pends upon the kind of rash produced by the drug but it is wise to apply bland preparations such as 1 per cent Ichthyol paste 1 per cent salicylic acid in Vaseline or zinc and castor oil cream rather than more potent remedies

Iodides and bromides

Iodides and bromides produce rashes which vary in severity from a few pustular spots to huge granulating tumours and fatal bullou reactions In the milder cases it is enough to stop the patient from taking the drug but if there is any evidence pointing towards a grave prognosis the patient should at once be admitted to hospital Some authorities advocate the administration of large doses of sodium chloride in the form of salty foods saline solution (intravenously and rectally) and sodium chloride tablets The author must confess however that he has seen little or no improvement with this form of therapy and believes that symptomatic treatment alone is efficacious Much depends upon careful nursing of the patient and one must always guard against over treatment

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CHAPTER 25

TOXIC ERUPTIONS

J R OWEN

TOXIC ERYTHEMA

UNDER THIS heading may be placed a variety of conditions differing widely in morphology and causation The essential pathogenesis in all is a vascular dilatation in the corium due to circulatory toxins which may be derived from organisms drugs foods enemas therapeutic injections or from less well understood causes including metabolic disorders such as nephritis For many erythematous eruptions no satisfactory reason can be found and it is in such cases that intestinal toxaemia may be invoked often without due justification The role of allergy is not well understood nor is the distinction between allergy and idiosyncrasy well defined certainly it is unusual for circulating antibodies to be demonstrable in such cases Defects in the nervous and circulatory mechanisms especially in relation to the extremities may modify the production and course of the erythematous process it may be recalled that stimulation of the peripheral end of a severed posterior spinal nerve root will produce erythema over the area of skin subserved

A tendency to symmetry is usual and the extent of the involvement is variable the whole body surface may sometimes be affected Rashes may be patchy or diffuse macular morbilliform scarlatiniform circinate or may exhibit other forms of polymorphism The more generalized types are not infrequently followed by desquamation

Prodromal rashes in the acute exanthematous group of fevers commonly assume an erythematous form apart from the characteristic eruptions of scarlet fever measles rubella typhoid fever meningococcal infection typhus and many other conditions Toxic absorption from septic foci especially those of streptococcal origin and septicaemia of all types are important causes Erythema is a remarkably constant feature in Weil s disease (spirochaetosis icterohaemorrhagica) and may be seen in infections with *Leptospira canicola* It is described in connexion with tuberculosis and occurs in a variety of tropical affections notably dengue yellow fever and typhus Metazoa as well as protozoa are sometimes causal perhaps the commonest examples in Great Britain and Northern Europe being the beef and pork tapeworms *Trichinella spiralis* and hydatid disease

Erythematous eruptions due to drugs are dealt with elsewhere morphologically they are often indistinguishable from many of the conditions noted here and in all cas s a careful inquiry regarding previous medication including injections of sera antibiotics and chemotherapeutic substances should be made

Foods notably shell fish strawberries and mushrooms are recognized causes and other kinds of fish and fruit as well as meat game or poultry which has been kept for too long are often concerned

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The association of gastro intestinal disturbance particularly diarrhoea and vomiting may be taken as *prima facie* evidence of intestinal toxaemia which may or may not b linked with a history of the ingestion of any of the above substances It is of interest that in such severe disorders as the dysenteries ulcerative colitis and sprue (in which intestinal physiology and anatomy are grossly altered) erythemas are not especially common

It remains to describe certain special types of erythema to which these considerations apply

Erythema multiforme

Erythema multiforme (erythema exudativum) is a recurrent and polymorphic eruption not infrequently preceded by malaise fever joint pains or sore throat but it may commence without premonitory symptoms (Fig 176) The lesions are characteristically of a rosy red colour forming discoid or irregular blotches which may however become modified by the appearance of concentric rings in varying shades of red yellow blue or purple and by the manifestation of vesicles and bullae upon them (Fig 177) The initial macular or maculo papular lesion may also fade in the centre to produce ring shaped forms Infiltration and extension may produce larger papules nodules or tubercles An urticarial element is not

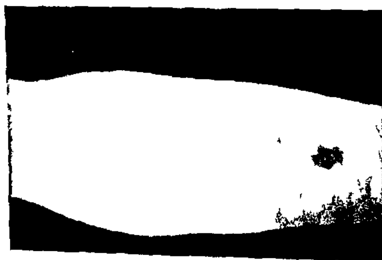


Fig 178 —Erythema multiforme central purpuric haemorrhage is present in the most distal lesion

uncommon and angioneurotic oedema or purpura may appear These varieties are known respectively as erythema iris vesiculosum bullosum annulare circinatum marginatum papulatum tuberculatum urticatum and erythema purpuricum A practical division is into maculo papular and vesiculo-bullous types (Fig 178)



FIG 176 —Erythema multiforme

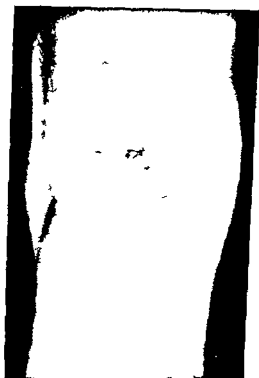


FIG 177 – Erythema multiforme bullosum

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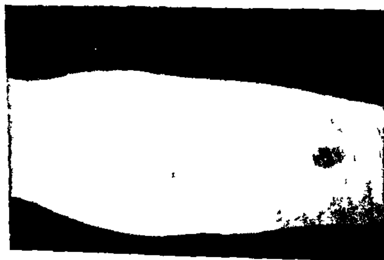


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Site

The rash is symmetrical in distribution, and has a predilection for the extensor surfaces of the hands, forearms feet and legs, although the trunk, neck face and proximal segments of the limbs are not uncommonly affected



FIG 179—Erythema multiforme showing papular lesions on the legs and characteristic maculo papular patches over the left arm

The lips buccal mucosa palate and fauces are often involved to a greater or lesser degree Other mucous surfaces may be attacked including those of the nose the conjunctiva, urethra vagina and anus Pseudo membranous inflammation follows the rupture of vesiculo bullous lesions and pain may be intense

Multiple or marked mucosal involvement fever constitutional symptoms and multiform erythematous and vesicular lesions most profuse on the hands and feet

have been described by Klauder (1937) and by Stevens and Johnson and named ectodermosis erosiva pluriorificialis or the Stevens Johnson syndrome to indicate a separate entity

In all forms itching of the skin tends to be slight or absent but burning pricking and a sensation of tension are often felt (Fig 179)

Aetiology

Children and young adults are most frequently affected and the majority of cases are said to occur in the spring and autumn Toxic substances derived from bacteria especially streptococci are probably the most common cause and it is possible that antitoxins and the like produced by the immunological response of the tissues to such infections may in some cases be concerned Septic foci anywhere in the body but especially in connexion with the tonsils nasal sinuses and teeth are frequently incriminated General systemic infections (such as septicaemias and acute rheumatism) drugs injections (especially of sera) parasitic affections including inflammatory types of ringworm unsuitable foodstuffs and enemas account for many cases Whenever gastro intestinal symptoms are a feature and when no cause can be found intestinal toxaemia is conventionally ascribed as responsible Hebra in his original description regarded the common form of the disease as a primary idiopathic recurrent condition and little justification can be found for refuting this conception It has been suggested that a virus of which the subject is a carrier is concerned

Symptomatic erythema multiforme is also seen in pneumonia enteric fevers diphtheria pericarditis endocarditis nephritis arthritis pelvic disease in women and death of the foetus *in utero* Among drugs coal tar derivatives iodides and sulphonamides are common offenders

Pathology

There is dilatation of capillaries with exudation of plasma and perivascular infiltration with leucocytes and sometimes red blood cells Capillaries may rupture with the production of purpura Vesicles and bullae arise when exudation traverses the epidermis Collagen fibres appear swollen and stain poorly

Course and prognosis

The usual attack runs an apparently self limited course of approximately 10–30 days Recurrences at intervals of a few months to a year or more are the rule In cases with extensive involvement of the mouth and marked constitutional symptoms in ectodermosis erosiva pluriorificialis and in association with pregnancy the disease is a serious one and death may result

Differential diagnosis

Maculo-papular type —The maculo-papular type may require to be distinguished from the following conditions

Secondary syphilis may be differentiated by the coppery or raw ham colour of the rash with distribution mainly on the chest back and face by the presence of a penile sore (or evidence of its recent presence) generalized adenitis mucosal lesions and by serological tests

Urticaria is a disease in which the individual lesions are of shorter duration greater irritability and paler colour

Tinea circinata is distinguished from erythema circinatum by its irregular scaly vesicular or pustular edge

Pityriasis rosea will be recognized by its distribution on the trunk and proximal limb segments by the herald patch and by a typical collarette of scales with a free margin directed centrally

Acute lupus erythematosus will affect the central parts of the face as well as the backs of the fingers, some degree of scaling is usual and multiformity is not usual In early cases the associated (usual) leucopenia is of help in diagnosis The course of the disease is much more prolonged, or leads to an early or late fatal termination

Vesiculo bullous type—The vesiculo bullous type of erythema multiforme may be confused with the following diseases

Dermatitis herpetiformis in which the history of prolonged recurrent attacks can usually be elicited is accompanied by intense itching, and grouped vesicles are characteristic In the early stage of a first attack, eosinophilia and intolerance to bromides whether taken by mouth or applied locally as a ' patch test , may be sought for

Pemphigus vulgaris in which bullae appear not on erythematous patches but on a previously normal skin surface

Bullous drug eruptions, the history of which should be of service in avoiding confusion

Bullous impetigo produces bullae which rapidly become cloudy and filled with pus In bullous impetigo of the new born *(pemphigus neonatorum) the contents* of the bullae may remain clear for a longer time but the age incidence distribution and evolution are different

Bullous urticaria is associated with weals

Lichen urticatus (*papular urticaria*) consists of urticated papules surmounted by a small scale crust or vesicle

Multiple insect bites which may give rise to bullae will not be confused if the *possibility is kept in mind In most cases* the colour, pattern and distribution of the eruption make the diagnosis of erythema multiforme an easy one

Treatment

The cause when discoverable will clearly claim priority of attention General systemic infections must be treated appropriately focal infections sought out and dealt with effectively When food is a possible cause or gastro intestinal disturbance is present saline aperients and restriction of diet are indicated, but in severe cases care must be taken to ensure that an adequacy of calories first class protein essential vitamins and sodium chloride is supplied The protein free purine free and salt free diets prescribed in the past lack rationale, and have undoubtedly done harm when the course of the disease has been protracted and marked by constitutional symptoms Rest in bed is often desirable and sometimes essential

With regard to drugs the aim should be specificity Thus in cases associated with acute rheumatism salicylates in full dosage are indicated for the treatment of the primary disease and when organisms vulnerable to penicillin or the sulphonamide drugs are concerned no time should be lost in administering these substances But for erythema multiforme itself there is no specific remedy Intestinal disinfec tants many of which are of doubtful efficacy and adsorbents such as charcoal and kaolin with or without liquid paraffin have their advocates especially when there are grounds to suspect toxaemia from the bowel Colonic lavage has also been advocated

In the more serious cases to which reference has already been made it may often be advisable to give penicillin systemically in full doses especially when mucosal involvement has led to secondary infection Sulphonamide preparations are also useful under such conditions and should be administered with the usual pre cautions They are often used empirically in the ordinary type of case with apparent success

The antihistamine series of compounds Antistin Anthisan Pyribenzamine and Benadryl appear to be of some service and merit further trial (for details *see* treatment of urticaria page 408)

Local treatment —Painful lesions inside the mouth present a separate problem Application of a local anaesthetic may be required before feeds are given although careful preparation of the food to render it soft and non irritating is usually suffi cient Penicillin lozenges may be dissolved in the mouth every 2 hours during the day but this should not be continued for more than 3 days since a specific stoma titis is sometimes produced Painting raw or membranous patches with 1 per cent aqu ous solution of gentian violet after a weak peroxide of hydrogen mouthwash 3–4 times daily is recommended The application of powdered aspirin is often use ful since it is mildly analgesic

The same dye solution may be used for lesions in the neighbourhood of the anus and a bland powder subsequently sprinkled on Argyrol solution 5 per cent may be used for the eyes but the assistance of an ophthalmologist should be sought in most cases Instillations of Argyrol 5–10 per cent are usually soothing and effective for urethral involvement

For maculo papular skin lesions calamine and lead lotion containing 2 per cent ichthammol is almost universally recommended Vesicles and bullae should be punctured aseptically and dressed with zinc paste and ichthammol 2 per cent

Recurrent scarlatiniform erythema

A bright red scarlatiniform rash patchy or generalized appears after a few days of prodromal malaise Desquamation starts by the second day and may become striking casts of the hands and feet b ing formed and nails shed It may be differentiated from scarlet fever by the early onset of desquamation the longer prodromal period and by the absence of such features as severe sore throat marked constitutional symptoms vomiting strawberry tongue lymphadenitis and disproportionately rapid pulse rate The duration is variable and successive attacks when they occur tend to be shorter and less severe Treatment is symptomatic

Erythema marginatum

Erythema marginatum is an irregularly circinate slightly raised erythematous eruption, sometimes associated with acute rheumatism in children and young people

Clinical features

The patterned figurate and marginated patches with their clear centres present a very striking picture and are unlikely to be mistaken for anything else They fade to be succeeded by fresh lesions and the duration of an attack is most variable The trunk is characteristically attacked Generalized erythema may also occur in cases of acute rheumatism, but rarely at the same time as erythema marginatum

Treatment

Symptoms are slight and calamine lotion is a satisfactory local application Treatment of the rheumatic condition with salicylates appears to be without effect on the skin eruption

Erythema nodosum

This condition is characterized by the eruption of tender erythematous nodular swellings usually confined to the extensor aspect of the legs below the knees

Aetiology

It is most often seen between the first and third decades of life and is commoner in females Middle aged women are sometimes affected There is a seasonal incidence in spring and autumn

Pathogenesis

Streptococcal infection rheumatism and tuberculosis have all been thought to have some connexion with erythema nodosum By some it is considered to be a specific disease, nodal fever Chronic meningococcal septicaemia trichophytosis and ingestion of drugs, such as sulphathiazole bromides iodides and antipyrin may sometimes apparently be causal Lymphogranuloma venereum and chancroid have also been cited

Pathology

Dilatation of vessels in the corium and subcutaneous tissues is followed by oedema leakage of serum extravasation of blood cells, blocking of capillaries with leucocytic thrombi localized fat necrosis and the appearance of giant cells Red cell disintegration later gives rise to pigmentation

Clinical features

Slight or severe constitutional symptoms mark the onset Fever sore throat joint pains and gastro intestinal symptoms are not uncommon Round or oval red shiny swellings ranging from 1 to 5 centimetres in diameter tender to the touch elastic in consistence and involving both skin and subcutaneous tissue appear on the front of the legs and much less frequently, on the extensor aspects of the forearms The eruption is bilateral and roughly symmetrical The lesions reach their full size rapidly, and last for a few weeks fresh crops sometimes appearing

Softening precedes disappearance but breaking down is not seen Pigmentation remains for some weeks

Differential diagnosis

The colour tenderness situation symmetry mode of evolution and ab ence of any tendency to break down are the points by which the disease may be diff ren tiated from cellulitis ab cess bruises gumma localized thrombosis panniculitis and erythema induratum (Bazin s disease) The meningococcal type of erythema nodosum is often wide pread on the limb and may involve the body the indivi dual lesions as a rule b ing small Repeated blood cultures may b necessary In areas where it is endemic coccidioidomycosis must be considered X ray examina tion of the chest estimation of the blood s dimentation rate and a Mantoux test are advisable in cases of suspected tuberculosis

Prognosis

Recovery usually takes place within a month The underlying condition may claim prior consideration Cardiac involvement of the rheumatic type must be watched for very carefully Attention to the cause will of course take precedence

Treatment

Rest in b d is of vital importance Salicylates are advisable in the presence of rheumatic symptoms or signs When such organisms as meningococci or strepto cocci are responsible as well as in cases in which pyrexia is a feature and the origin ob cure full doses of p nicillin and sulphonamides will b indicated Locally cool ing applications such as lead lotion or a 10 p r cent Ichthyol cream may be used The case with a tuberculous aetiology should stay for 3 months in a convale cent home or in a private house at the seaside or in the country

Granuloma annulare

Clinical features

Flat topped nodules set in the form of irregular rings appear most often on the dorsum of the hands or feet but occasionally in other areas The nodules may be pink lilac white or the colour of normal skin and run a very indolent course terminating in spontaneous resolution (Fig 180)

Aetiology

The aetiology is unknown It was at one time believed that tuberculous infection is in some cases more than a chance association but proof of this is lacking An allergic response to toxins from various sources is a usually accepted explanation

Pathology

A central area of necrosis in the corium is surrounded by a zone of lymphocytes epithelioid polymorphonuclear and spindle cells between which strands of rather poorly staining collagen may be seen Elastic tissue disappears In the epidermis the Malpighian layer is thickened

Varieties

Confluence may lead to the formation of polycyclic and gyrate figures Deeper infiltration is sometimes seen

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It is most often seen between the first and third decades of life and is commoner in females Middle aged women are sometimes affected There is a seasonal incidence in spring and autumn

Pathogenesis

Streptococcal infection rheumatism and tuberculosis have all been thought to have some connexion with erythema nodosum By some it is considered to be a specific disease, nodal fever Chronic meningococcal septicaemia trichophytosis and ingestion of drugs, such as sulphathiazole, bromides iodides and antipyrin may sometimes apparently be causal Lymphogranuloma venereum and chancroid have also been cited

Pathology

Dilatation of vessels in the corium and subcutaneous tissues is followed by oedema leakage of serum extravasation of blood cells blocking of capillaries with leucocytic thrombi localized fat necrosis and the appearance of giant cells Red cell disintegration later gives rise to pigmentation

Clinical features

Slight or severe constitutional symptoms mark the onset Fever sore throat joint pains and gastro intestinal symptoms are not uncommon Round or oval red shiny swellings ranging from 1 to 5 centimetres in diameter tender to the touch elastic in consistence and involving both skin and subcutaneous tissue appear on the front of the legs and much less frequently on the extensor aspects of the forearms The eruption is bilateral and roughly symmetrical The lesions reach their full size rapidly and last for a few weeks fresh crops sometimes appearing

Histology

Low grade inflammatory changes in the dermis may be found most marked around the sweat glands

Aetiology course and treatment

These are in general the same as in granuloma annulare of which erythema elevatum diutinum may possibly be a variant

Erythema annulare centrifugum

Clinical features

Erythema annulare centrifugum is a recurrent condition in which annular and polycyclic erythematous lesions with an elevated cord like pink or yellow border evolve and spread resolve and are succeeded by the appearance of fresh patche Unusual cases with scarring telangiectasis and purpura have been described Some believe that there is a link with dermatitis herpetiformis The trunk and proximal parts of the limbs are predominantly affected the duration is of several months and recurrences are common

Treatment

Treatment is ineffective but eventual spontaneous disappearance is the rule

Diagnosis

Syphilis leprosy and the circinate type of sarcoid are to be excluded

Erythema infectiosum

Erythema infectiosum is an acute infectious disease of childhood characterized by an infiltrated blotchy erythema of the face and extensor surfaces of the limbs which subsequently clears centrally to form circinate patterns Constitutional disturbance is very slight and pyrexia is invariably absent

PURPURA

Purpura is manifested by haemorrhage into the skin and mucous membranes and sometimes into the internal organs brain and retina In the skin the typical purpuric spot varies from the size of a pin head to that of a pea and is red brown or purplish in colour Since blood is extravasated through the capillaries pressure with a glass slide or lens does not cause the colour to disappear as it would in simple dilatation of the blood vessels More extensive interstitial haemorrhages may produce ecchymoses resembling bruises or haematomas which form localized collections of fluid blood Bleeding very often occurs from as well as into mucous membranes and constitutes the commonest danger in severe cases

In all cases it may be said that damage to capillary walls or a defect in the blood coagulation mechanism is concerned and may be brought about by various means

The proposed classification of purpura is into primary symptomatic and hereditary groups

Diagnosis

The appearance is usually so typical that no difficulty will be experienced Early cases may be mistaken for tinea but lack the scaly finely vesicular or pustular edge, and the irritability of this condition The annular type of sarcoid may cause difficulty and necessitate a biopsy Necrobiosis lipoidica diabeticorum develops a yellowish centre and a pink periphery

Treatment

Toxic factors should be sought for and remedied In most cases they will not be found Light freezing with carbon dioxide snow, fractional doses of x rays and sometimes an occlusive dressing will often produce resolution but recurrence



FIG 180 —Granuloma annulare

may follow Preparations of vitamin E have been used with some apparent success and may be given in the form of Ephynal tablets 50 milligrams twice daily

Erythema elevatum diutinum

Clinical features

Pink nodules appear in the skin become purplish, and coalesce to form raised discoid plaques, whose outline is irregularly oval or arcuate Rarely tumour like formations may be seen Pressure points such as knees and elbows are favoured sites but extensor surfaces generally and less commonly the buttocks palms soles and ears are involved Tenderness itching and tingling are occasional symptoms

Histology

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Aetiology course and treatment

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Primary purpuras

Purpura simplex

This is a mild type commoner in children, affecting the lower limbs more than the upper parts of the body, and sometimes to be discovered inside the mouth Poor food and bad living conditions appear to play a part in causation and familial incidence is not unusual The blood picture shows no abnormality apart from a mild hypochromic anaemia in some cases Treatment consists of attention to nutritional factors and rest in bed

Essential thrombocytopenia

Essential thrombocytopenia (thrombocytopenic purpura or morbus maculosus werlhofii) is a not very uncommon and extremely important condition the essential features of which are diminution of circulating blood platelets and purpura By some it is grouped amongst the primary purpuras An acute and a chronic form are differentiated Both are recurrent and bleeding from mucous surfaces is usual to such an extent as to endanger life in acute cases In chronic cases the spleen is often palpable whereas in the acute variety there is seldom any enlargement Onset in childhood is common in the chronic condition and a hereditary form is described In all cases the platelet count is reduced to below the critical level of 40 000–60 000 per cubic millimetre when haemorrhage is taking place but may rise during remissions to the normal of 250 000–400 000 In chronic mildly active or intermittent states the count may be between 100 000–150 000 per cubic millimetre When bleeding is going on the capillary resistance test is positive bleeding time is increased and a non retractile or poorly retracting clot is formed when blood is shed The clotting time, however, remains normal

Diagnosis—The diagnosis will be made on the features described, but it must be remembered that diminution of platelets purpura and haemorrhages are seen in acute leukaemia aplastic anaemia and untreated pernicious anaemia If the bleeding is from only one site such as the stomach rectum or nose, the presence of a general blood disease may be missed If thought of a positive capillary resistance test will reveal that something more than a local condition is present and laboratory findings will give further confirmation

Prognosis—The mortality even in acute attacks is low Recovery follows rest in bed in mild attacks and successive attacks in chronic cases become milder, finally tending to disappear altogether

Treatment—Rest in bed is of paramount importance Blood transfusion is most valuable, especially in acute and severe chronic cases Splenectomy may be indicated in the chronic condition but never in the acute type

Henoch s and Schonlein s purpuras

Henoch s purpura may be defined as a disease of early life characterized by recurrent purpura with abdominal colic melaena and sometimes haematemesis

Schonlein s purpura (peliosis rheumatica) is most common in children and young people , recurrent arthralgia and arthritis are seen here in association with purpura

In both the above forms there is leakage of plasma as well as whole blood into the skin with the production of an urticarial element This has led to the conception that an allergic or anaphylactic process is responsible (anaphylactoid purpura) Remarkably little evidence can be found to support this hypothesis

Diagnosis—Henoch s purpura must be distinguished from acute abdominal conditions especially intussusception with which it has been known to coexist A few purpuric spots at least should be found if looked for and in Henoch s purpura the tourniquet test for increased capillary fragility is often positive A reliable method of performing this is to apply a sphygmomanometer cuff at diastolic pressure around the arm for 2 minutes and watch for the subsequent appearance of petechiae on the limb distal to the point of application the other arm being used as a control Normally higher pressures than this can be sustained for longer periods without spots being produced but this is a safe standard to set It is sometimes helpful to encircle an area on the flexor aspect of the forearm with a skin marking pencil and count any spots that may be within it before and after pressure has been applied The test is positive in many forms of purpura

Symptomatic purpuras

These form by far the largest group and may be subdivided into the sections given below

Infective

Some of the specific infective fevers may appear in haemorrhagic form and give rise to a profuse purpuric eruption In meningococcal meningitis meningococcal septicaemia and in typhus the rash is always of this nature although that of typhus contains other elements Measles smallpox scarlet fever and diphtheria when haemorrhagic carry a serious prognosis Septicaemia pyaemia and infective endocarditis are not uncommon causes and tropical diseases notably plague yellow fever typhus blackwater fever malaria and relapsing fever may require consideration in areas in which these conditions are endemic Purpuric spots may be seen in typhoid fever but a true haemorrhagic form of this disease is very rare Septic foci especially those associated with haemolytic streptococcal infection are probably more common and important causes than is generally realized

Toxic and metabolic

Such varied conditions as nephritis and uraemia severe liver disorders (acute and subacute hepatic necrosis cirrhosis) cachexia from malignant disease and tuberculosis old age (senile purpura) injections of serum snake venom and the use of anticoagulant substances such as heparin and dicoumarol fall under this heading

Due to deficiency states

(a) Lack of vitamins C K and P respectively may cause scurvy hypoprothrombinaemia and increased capillary fragility A crystalline glucoside has also been prepared from buckwheat (rutin) and appears to be concerned with the maintenance of capillary integrity but its exact status is at present uncertain

(b) Lack of certain anti anaemic factors gives rise to *anaemia sufficiently* severe to cause purpura Nutritional macrocytic anaemia follows lack loss or failure of absorption of food substances containing Wills s factor or Castle s extrinsic factor pathological conditions affecting the stomach itself and some times the alimentary tract lower down, may deprive the haemopoietic system of that intrinsic factor *necessary to complete the reaction for the formation* of haemopoietin with a resulting Addisonian type of anaemia Uncomplicated iron deficiency anaemia is unlikely to be severe enough to produce purpura

The absorption factor is important in connexion with the vitamins and other factors mentioned Steatorrhoea or lack of bile in the intestine from disease of liver or gall bladder will interfere with absorption of the fat soluble vitamin K and rapid passage of essential substances through the alimentary tract whether from this from any other cause of intestinal hurry, or from gross lesions such as gastro-colic fistula may mean failure of the opportunity for essential substances to become fully absorbed

(c) Deficiency of plasma fibrinogen from hepatic disease is probably a very rare cause and will operate by upsetting normal blood coagulation

(d) Calcium deficiency (haemophilia calcipriva) is also uncommon Calcium may be reduced in the blood by reason of steatorrhoea injury to the parathyroid *glands or disturbances of calcium phosphorus metabolism* Blood coagulation will again be interfered with

Due to blood diseases

Apart from the deficiency anaemias mentioned above the following are of importance

(a) Aplastic anaemia
(b) The leukaemias including aleukaemic leukaemia
(c) Pernicious (Addisonian) anaemia
(d) Splenic anaemia (Banti)
(e) Polycythaemia vera
(f) Leuco erythroblastic anaemia This may be seen in carcinomatosis myelo sclerosis *multiple myeloma* Cooley s anaemia and other diseases involving bone extensively

Due to drugs and poisons

The following drugs are known to produce purpuric *manifestations* Adalin antipyrin *aspirin barbiturates belladonna bromides* chloral chloroform copaiba, dicoumarol ergot gold iodides potassium chlorate quinine salicylates Sedormid sulphonal sulphonamides and organic arsenicals

Poisons such as benzol phosphorus T N T and snake venom may produce a purpuric condition

Due to circulatory disorders

Purpura may be seen *in* several conditions causing circulatory *congestion* of which the following are examples congestive heart failure hypertension varicose veins constriction by garters or tight bandages and a gravitational form occurring

when the legs are put to the ground after a prolonged stay in bed especially in debilitated subjects A very rare cause is periarteritis nodosa

Trophic and nervous purpura

A symptomatic purpura may be caused by peripheral neuritis tabes dorsalis and hysteria

Traumatic purpura

Injuries and insect bites are further causes of purpura

Exogenous purpuric eruption

A purpuric eruption thought to be due to contact with khaki uniform shirts and possibly army blankets was seen amongst British and Allied troops during World War II Increased capillary fragility was associated with the condition Patch tests with suspected materials gave varying results

Hereditary haemorrhagic states

Hereditary haemorrhagic telangiectasis is a rare heredo familial disease in which small telangiectases or angiomas are found on the skin and mucous mem branes Those on the skin are innocuous but profuse bleeding from the nasal mucosa which is often the most severely affected area and from the intestine may occasion alarm

Hereditary thrombocytopenic purpura is also familial combining the association of purpura a low platelet count prolonged bleeding time and a normal coagulation time There is a close resemblance to the chronic type of essential thrombo cytopenia but splenectomy is not of value Bleeding into joints may occur

Hereditary fibrinopenia is an exceedingly rare condition Diagnosis is made in the laboratory after all other possible causes have been excluded

Diagnosis

There are few medical conditions in which careful history taking and clinical examination are of greater importance Previous attacks familial incidence and the recent administration of drugs exposure to infections a previous history pointing to a possible toxic cause such as nephritis associated symptoms in joints or abdomen and dietetic factors may need to be the subject of inquiry In examina tion the whole skin surface finger nails visible mucous membranes retinae lymph glands spleen and circulatory system should receive especially careful attention but no system should be neglected The tourniquet test may be useful and the examination of the urine for albumin should not be forgotten

Laboratory tests

In most cases and in all wh n the diagnosis remains uncertain after a few hours a full blood count including the platelets should be made Estimations of bleeding coagulation and prothrombin times and observation of clot retraction are also of great use and are often of vital importance Examination of the bone marrow by sternal puncture may be helpful in the diagnosis of aplastic anaemia aleukaemic

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blood cells or whole blood to escape (urticaria haemorrhagica) When sub cutaneous or submucous tissues are involved giant urticaria or angioneurotic oedema is seen

Causation

Urticarial subjects often give a personal or familial history of allergic disturb ances such as asthma or hay fever and it may be that the predisposition to sensiti zation exists in many of them Some exhibit dermographism when as a result of firm stroking of the skin a weal is produced along the line of contact

External agencies

External agencies capable of producing urticaria include stings from nettles insects jelly fish and other marine organisms and exposure to heat cold and ultra violet light A blow from a cane or a whip lash will much more easily produce a weal in some subjects than in others and where dermographism exists the lightest stimulus may have the same effect

Emotion seems to play an important or even a major part in certain individuals and it has been suggested that the indirect stimulation of cholinergic nerve fibres may be an intermediary mechanism It is true that urticarial weals can be produced by stimulating the peripheral end of a severed posterior spinal nerve root though the immediate link between this and the psychological factor may not be apparent

Urticaria brought on by heat exertion or emotion has been shown experimentally to be due to an abnormal sensitivity of the skin to acetylcholine or some substance *closely related to it* In the case of cold a dermolysin capable of uniting with sensitized cells only at low temperatures is in circulation and lysis occurs when the temperature rises It is in such subjects as this as well as in a large number of obscure and *chronic* cases that no specific antigen can be discovered and it would appear that the skin is reactive to quantities of histamine like or choline like sub- stances which would produce no effect in a normal person Such small amounts are without doubt produced physiologically and the administration of *antihistamine* substances will often prevent the urticarial reaction *from taking place*

In one series of chronic cases of obscure origin a diminution of prothrombin in the blood was found in 65 per cent of patients and in 60 per cent of these relief was obtained from vitamin K analogu

Internal agencies

In most cases the antigen is blood borne and may be derived from the following sources

The alimentary canal —(a) Food allergy to such articles as shell fish salmon eggs strawberries and mushrooms (b) *From these or other foods* which have undergone decomposition (c) Incompletely digested protein fractions (d) Products of an abnormal bacterial flora (e) *Drugs including* salicylates barbiturates sul phonamides and many others (f) Intestinal parasites (g) Enemas which include medication such as turpentine or soap in their composition

leukaemia leuco erythroblastosis and other rare disorders Repeated blood cultures are sometimes necessary Microscopic *haematuria may indicate minute* emboli in the kidneys from subacute bacterial endocarditis

It must be admitted that in many cases the cause remains obscure despite the best endeavours of clinician and pathologist

Prognosis and treatment

Both prognosis and treatment are dependent on the cause when this can be elucidated Blood transfusion is the most generally applicable and useful treatment in very severe cases, whether their origin can be determined or not, but it will be of limited value in many of the symptomatic types

Purpuric and polymorphic eruptions

A brief description of the following rare and chronic purpuric and polymorphic eruptions is included here, although they have little aetiological or other relationship to ordinary purpura, and may perhaps be more properly considered amongst the pigmentary dermatoses

Purpura annularis telangiectodes (Majocchi)

Symmetrical rose red telangiectatic and purpuric lesions with a tendency to annular formation and central atrophy appear in this disease, characteristically on the legs and dorsal surfaces of the feet more rarely on the thighs forearms and body Spontaneous resolution after a few months is usual following treatment by rest and support

Pigmented purpuric lichenoid dermatitis (Gougerot and Blum)

Elevated papules of red orange or sepia colour manifest themselves on the legs thighs lower part of the trunk and very rarely on the arms *Purpuric and telangi*ectatic elements develop Individual lesions are small ranging from ¼–2 millimetres in size, numerous at first discrete but with a tendency later to become grouped and confluent They tend to be symmetrically distributed though this is not always the case Itching is a variable feature Involution may occur after a number of years Treatment appears to be ineffective

URTICARIA

The characteristic transitory eruption of weals in this common condition is well known A precisely similar skin reaction is seen as a response to external trauma and *is believed to be due to the liberation in the damaged cells of a substance* either identical with, or closely allied to histamine the H substance of Lewis This substance is also produced as a *result of the antigen–antibody* reaction in sensitized tissues which is considered to be the basis of all allergic reactions Increased capillary permeability follows with dilatation of the arterioles *through* a local axon reflex Both factors favour exudation through capillary walls and a weal is produced The fluid exuded may in its turn press upon capillaries and cause blanching and the weals may thus be turned from red to white Bullae may be formed on the surface of weals (urticaria bullosa) or capillary damage may allow

but water and glucose for the next 24 hours Since it has b en shown that most if not all attacks of urticaria follow within 4 hours of the ingestion of an allergen one article of diet (which must b pure in the sense that it consists of a single basic foodstuff such as milk b ef mutton bread or fish) may be added at each 4 hourly fe d Any food apparently causing a reaction must be re tested for confirmation at least once

It is held by some that reactions may be delayed for as long as 72 hours Should this b the case re testing with the last food taken will b negative and all articles ingested during the previous 3 days will be under suspicion Careful records must in all cases be kept in the hope that a definite relationship b tween food and the urticarial attack will eventually b found Many disb lieve in the existence of such delayed reactions certainly it is true that in the Prausnitz Kustner reaction (referred to below) an urticarial weal will be produced within 2½ hours of the allergen being taken by mouth

The elimination type of diet may also b worthy of trial in p rsistent cases whose origin eludes detection This method is based on the complete avoidance of successive articles of diet for a period of 3 days regular bowel action being ensured Cessation of attacks may reveal the causal factor

The Prausnitz Kustner reaction or passive transfer test escapes these disadvantages and is of great value In this method approximately 0 1 millilitre of serum from the subj ct is injected intradermally into a normal person and a control is made into an adjacent portion of skin in a similar fashion with serum from another non allergic individual Within 45 minutes the site of the injection will have become sensitized to the ingestion or inhalation of the offending substance or to skin testing (by intradermal or scratch methods) with extracts made from it It is however recommended to allow 24 hours to elapse and to feed the suspected substance when the stomach is empty Any reaction produced b comes more marked during the next few hours following its appearance and will be seen from within a few minutes to 2½ hours of the time the test is made The sensitized area will remain reactive to further testing for several weeks There is no need to stress the usefulness of this investigation especially in difficult cases

Incompletely digested protein fractions may b suspected when the stools are foul bulky and contain undigested meat fibres A too rapid passage through the int stine from any cause may result in this state of affairs but it is probably an uncommon cause of urticaria However it is wise to have matters investigated by a microscopical examination of the stool which should also include a search for parasites

Gastric achlorhydria may also require to b excluded by a fractional te t meal Hydrochloric acid pepsin and diastase are sometimes given as a therapeutic test of digestive dysfunction

The presence of indican in the urine is considered by many to b an indication of an abnormal bacterial flora and stool culture may show an excess of streptococci

S ptic foci have already b en mentioned The teeth tonsils and paranasal air sinuses should receive particular attention in chronic cases

A blood count with esp cial reference to the total and differential numb rs of white blood cells may be of great value in excluding blood diseases and in

Septic foci —Such sources and conditions as the following may require consideration teeth tonsils, sinuses otitis media, bronchiectasis, cholecystitis, pyelitis and cystitis pelvic disease in women *prostatitis and urethritis in men*

Tissue breakdown —Haematomas tuberculous glands neoplasms and Hodgkin s disease

Systemic parasitic infestations —*Trichinella spiralis* and hydatid cysts (especially if rupture has occurred in the latter)

Injections —Injections of serum, antibiotics and blood transfusion

Metabolites —Metabolites of physiological origin, during pregnancy lactation and menstruation

Inhalants —Pollens *dusts and far less frequently* paint fumes and tobacco smoke

Other sources

The skin itself is an important and not uncommon factor Scabietic mycotic and septic conditions are frequently overlooked and should be carefully excluded

Contributory causes

Endocrine imbalance at the menopause and hyperthyroidism are associated more often than can be allowed for by coincidence Psychological causes are undoubtedly of great importance and may operate through the mechanism already referred to

Course and prognosis

The commonest type is of acute onset and of a duration limited to a few weeks The usual excitant is one of the food factors to which reference has already been made *In chronic types everything depends on the accurate elucidation and* assessment of discoverable causal or predisposing factors

Differential diagnosis

Urticaria must b differentiated from erythema multiforme in which itching is slight or absent the lesions are of a deeper red more likely to be found on the dorsal surfaces and distal parts of the limbs and the duration is longer Bullous and haemorrhagic variants *may* sometimes cause difficulty

A carefully taken history and thorough clinical examination dispose of many of the conditions mentioned above Inquiry with *regard to drugs is important*

Foods

In the absence of any clear history pointing to an offending substance a food diary should be kept In this diary in parallel columns a list of foods taken at each meal and a note of exacerbations is listed Coincidence will thus be observed suspected articles are subjected to a further test and may be eliminated from the *dietary if finally incriminated*

An alternative method more trying to the patient but more often fruitful in results is to administer a morning *saline aperient and to allow nothing by mouth*

cent of Liquor Picis Carbonis (*B P*) has a similar action Zinc cream containing either of these or similar antipruritics is effective Most physicians have their favourite prescriptions and many combinations are efficacious

Treatment of chronic cases

In chronic and recurrent cases the same drugs and similar local applications are indicated to control the disease and its exacerbations while a search for the cause proceeds

If any article or articles of diet are proved to produce attacks two approaches to the problem can be made First the offending substance may be avoided altogether If for any reason this is impossible the alternative is to attempt desensitization by feeding with graduated amounts of the substance Should urticaria reappear the same amount should be taken without increase or diminution until the attack has subsided when gradual increase is recommended

When digestive faults are indicated by gastric achlorhydria hypochlorhydria or the abnormalities of stool previously referred to dilute hydrochloric acid in full doses pepsin and less commonly diastase will be required A useful prescription is given below

Acid Hydrochlor Dil } aa 60 min
Glycer Pep in }

This should be taken in half a pint of lemon water or lemonade with meals Two tablets of Taka Diastase may be taken 2 hours after meals

When indicanuria is present or an abnormal bacterial flora is found on stool culture the oral administration of sulphaguanidine or Sulfasuxidine 0 5 gramme for every 10 pounds of body weight 4 times daily is very often successful in restoring conditions to normal A course lasting a week is generally quite sufficient but toxic effects are rare since absorption from the bowel is limited The older treatments such as kaolin with or without charcoal by mouth given with the object of adsorbing toxic substances and the oral administration of *Lacto bacillus acidophilus* to alter intestinal bacteriology may sometimes be effective Colonic lavage still has many advocates and does in fact sometimes succeed in a striking fashion after many other things have been tried and have failed this is often dubiously explained on psychological grounds

The inhalation of pollens and dusts of various sorts is probably not a very common cause of urticaria Here again the ordinary method of skin testing is unreliable and the Prausnitz Kustner passive transfer reaction is valuable If confirmation of an air borne substance s responsibility can be obtained either avoidance or specific desensitization by graduated injections of extracts made from it should be attempted Standardized testing solutions against air borne dust proteins and appropriate desensitizing solutions for injections are produced in Great Britain by C L Bencard (1934) Ltd and by Duncan Flockhart & Co Ltd

When a focus of sepsis has been localized for example in an apical tooth infection an autogenous vaccine for subsequent injection is sometimes made from the organism concerned at the same time as the focus is dealt with This of course does not eliminate the necessity for correct treatment of the focus

indicating the probability of inflammatory toxic or degenerative factors being at work

Too much time should not be lost before an estimation of the blood prothrombin level is made It has often been suggested that the detoxifying function of the liver is at fault in urticaria and other allergic conditions but no biochemical test has been found to give support to this assumption Prothrombin formation is however, a function of the liver to perform which the provision of vitamin K or one of its synthetic analogues is required In cases in which the blood prothrombin level is reduced, the administration of these substances is often strikingly successful

Treatment

The commonest type of urticaria is the acute case due to some unsuitable food A purgative rest and restricted diet for a few days is usually sufficient and should be combined with the administration of antihistamine drugs Those in use at the present time in this country are Antistin, Anthisan and Benadryl For an adult the average dosage of Antistin and Anthisan is 400 milligrams (6 grains) daily which may be given in divided doses 4 hourly, half of these amounts of Benadryl in capsule form is an equivalent dose The dose may however require to be varied greatly in accordance with the tolerance of the subject and the therapeutic effect achieved Only half of these quantities are tolerated by some individuals while the dose in those who are both resistant and tolerant may be increased with success to an amount $2\frac{1}{2}$ times as much (1 000 milligrams of Antistin or Anthisan or 500 milligrams of Benadryl in 24 hours) The newer antihistamine preparations may prove to be more effective when they become available

Toxic effects from these drugs are depression lassitude drowsiness and giddiness, which may be to some extent overcome by the oral administration of Benzedrine, 5–10 milligrams ($\frac{1}{12}$–$\frac{1}{6}$ grain) Insomnia thirst, nausea vomiting and hot flushes are other undesirable side reactions

Other methods of procuring relief in acute attacks or exacerbations are the injection of adrenaline subcutaneously in doses of 0 1–0 5 millilitre, which may have to be repeated at frequent intervals or the combination of this method with the intramuscular injection of 0 5–1 millilitre of pituitrin which should not be repeated more than thrice daily since it will cease to be effective Ephedrine sulphate 30 milligrams ($\frac{1}{2}$ grain) 3 times daily is thought to act similarly to adrenaline but its action is weaker and is often imperceptible A more recently available synthetic isomer of adrenaline Neo Epinine administered sublingually in tablet form appears to be as effective as are injections of adrenaline and has a more prolonged effect Sedatives such as barbiturates chloral hydrate and bromides may be useful but are better not used—or only used cautiously—together with the antihistamine series whose soporific properties may with advantage be exploited in severe cases especially at night time

Local treatment

Warm baths containing 1 drachm (4 grammes) of sodium bicarbonate to each gallon of water should be followed by the application of a bland dusting powder to which 3 per cent of powdered camphor may be added Calamine lotion containing 2 per cent phenol is a useful antipruritic Lead lotion containing up to 12 per

inquisitorial history taking combined with a careful and thorough clinical examination is the basis of a successful therapeutic approach

Angioneurotic oedema

The pathogenesis of angioneurotic oedema or giant urticaria is considered to be the same as that of urticaria The essential difference in the clinical manifestations is accounted for by the hypothesis that the sensitized cells are situated in the subcutaneous or submucous cellular tissues although those of the dermis and epidermis may also be involved to produce both types of lesion simultaneously A familial incidence is frequent the allergic diathesis and nervous factors are also important

Clinical manifestations

Swellings appear most frequently on the face extremities genitals or submucosa of the upper alimentary tract but may be seen in any situation They may be hotter or colder than the surrounding skin opaque translucent or waxy looking white yellowish pink or red There is no pitting on pressure and the consistency varies greatly from soft elasticity to a surprising degree of hardness Size is variable and is greatest wherever the subcutaneous tissues are soft as on the eyelids lips and genitals The hands may become enormous

An outbreak seldom lasts more than 24 hours and tends to recur either at fairly regular intervals or in connexion with the exciting factors of allergic disorders in general The chief importance of the disease is that swellings affecting the inside of the mouth tongue and glottis may become large enough to obstruct the airway In one familial series of recorded cases 12 out of 49 sufferers died from this cause

Associated conditions

The simultaneous occurrence of abdominal colic vomiting or diarrhoea supports the belief that the gastro intestinal tract may be involved at lower levels Haemoglobinuria albuminuria purpura urticaria and erythema multiforme have also been recorded not infrequently

Differential diagnosis

Angioneurotic oedema must be distinguished from localized cellulitis which may be recurrent especially on the face the so called chronic erysipelas localized scleroderma and localized venous thrombosis or lymphatic obstruction The evolution and duration of these conditions as well as the previous history should prevent confusion The most careful inquiry must be made concerning drugs recently taken and unusual articles of food consumed

Treatment

This is the same as for ordinary urticaria save in this important respect If there is swelling of the tongue glottis larynx or other parts liable to obstruct the respiratory passages no time should be lost in giving adrenaline pituitrin and antihistamine substances in full doses and repeating them if necessary (preparations of the antihistamine substances are now available for use by injection) It

Psychological factors must be treated on their merits In suitable subjects a simple explanation of the circumstances concerned is sufficient, in others the assistance of an expert must be obtained Phenobarbitone is often very useful and should be given 2–3 times daily in doses of $\frac{1}{4}$–$\frac{1}{2}$ grain Particularly when emotion precipitates attacks this may be usefully combined with atropine or belladonna (atropine sulphate $\frac{1}{200}$–$\frac{1}{5}$ grain tincture of belladonna 5–30 minims) with the object of damping down cholinergic activity

Non specific desensitization

In cases in which the causation remains obscure and in those which remain intractable for other reasons as well as when full investigation is for any reason temporarily impossible, resort must be had to non specific desensitization Many substances have been used for this purpose and the following are adjudged by most observers to be among the best

Autohaemotherapy

This simple treatment which has the advantage that the therapeutic substance is always on the spot consists in withdrawing 10 millilitres of blood from a suitable vein, and immediately re injecting it into the gluteal muscles This should be re peated every 5–7 days but if benefit is not achieved after 6 injections nothing is to be gained by continuing the treatment

Peptone

Peptone may either be given in 1 gramme capsules half an hour before meals, or by injection of Armour s Peptone No 2 intramuscularly or intravenously A 5 per cent solution is used commencing with 0 1 millilitre and increasing by the same amount every fourth day up to a total which should not generally exceed 1 millilitre

T A B vaccine

Definite protein shock with pyrexia is of course produced A specially prepared vaccine must be used and is more reliable in its effect if given intravenously The initial dose should be from 25 000 000 to 50 000 000 organisms according to the size and constitution of the subject and the treatment may be repeated in the same way as autohaemotherapy but with gradual increase of the dosage to maintain the effect the patient being kept in bed until quite recovered from the pyrexial bout Old and feeble persons and those suffering from associated con stitutional disorders of any severity should not be subjected to this form of treatment which is obviously most unpleasant for the patient, and not invariably followed by benefit

Sterile milk

Lesser degrees of protein shock with pyrexia can be achieved by injections of sterile milk 5–10 millilitres intramuscularly

Summary

To summarize and correlate the various considerations briefly outlined above it is essential to bear in mind that a painstaking and sometimes necessarily

Local treatment—Calamine lotion containing ½ to 2 per cent phenol is soothing Liquor Picis Carbonis (*B P*) 12 per cent in Unguentum Hydrargyri Ammoniati Dilutum (*B P C*) is suitable in impetiginized cases

Pathology

There is dilatation of papillary vessels exudation of serum and perivascular infiltration with cells derived from the blood Vesicles form in the epidermis and sometimes become bullous

Diagnosis

In scabies the distribution and initial lesion are usually sufficiently characteristic Extensive involvement with impetiginization may sometimes create difficulty Vesicular types may be confused with varicella in which fever and mucosal lesions of the mouth will help in differentiation Bullous varieties have been mistaken for pemphigus very rare in early life in which bullae appear on a normal skin surface Pemphigus neonatorum (better named bullous impetigo of the new born) is seen in the early days of life and leaves a raw red surface beneath the bullae Insect bites tend to be grouped and examination with a lens may reveal the small central punctum made by the insect s proboscis Papular erythema multiforme is not very common in young children is less likely to irritate and is usually found on the backs of the hands and other characteristic situations Papulo vesicular eczema has a tendency to weep and to form grouped or confluent lesions

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should not be forgotten that tracheotomy or intubation of the larynx may be vitally necessary at short notice.

Papular urticaria

This disease is also known under the alternative titles of lichen urticatus, strophulus, gum rash and heat spots, and is an extremely common skin disorder of infancy and the early years of life. Many authorities regard it as an entirely separate entity from ordinary urticaria, others consider that the occasional severe and persistent cases seen constitute a link with Hebra's prurigo.

Clinical features

Firm circumscribed papules and nodules, varying from the size of a pin head to that of a pea, possessing a transient urticarial element, and later becoming surmounted by a scale, crust or minute vesicle, appear mainly on the covered parts of the body. There is a predilection for the lower part of the abdomen, back and buttocks, but no area is immune. Crops of these lesions appear, usually towards evening, over a period of weeks, each of them lasting for about a fortnight. Vesicles and sometimes bullae may arise on their summits, but in any event itching is always intense, and scratching gives rise to crusting with dried serum or blood and often to impetiginization. Remissions may last for weeks or months; recurrences are frequent in spring, late summer and early autumn, but may occur at any time.

Aetiology

It has been demonstrated that the removal of the patient to hospital, even though the usual food is supplied from home, will produce remission. The exact nature of this environmental factor is obscure. Excess of carbohydrates and uncooked fruit, digestive disturbances, teething and overclothing seem to be important contributory factors in precipitating attacks.

Treatment

Control can, in the vast majority of cases, be achieved without change of environment. Nevertheless, a holiday with friends or by the seaside is often valuable, and in severe or septic cases the patient may require to be admitted to hospital, especially when home conditions are unsatisfactory. Regular and careful feeding is necessary. Reduction of carbohydrates, especially sugar and sweets, is desirable and fruit should be avoided during attacks. Digestive disturbances will require correction, and such tried remedies as rhubarb and soda mixture with the addition of a little bromide to subdue the irritation, or mercury with chalk in tablet or powder form, are recommended. Sedatives such as chloral hydrate to procure rest from nocturnal itching may also be necessary.

The antihistamine substances appear to have a good effect in many cases, particularly with regard to allaying irritation. Elixir of Benadryl is a convenient preparation for small children, who seem to tolerate and often require quite large doses. Some soporific effect is usual, and it is probably unnecessary to give other sedatives concurrently.

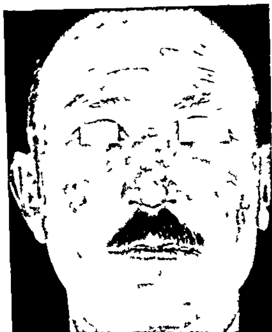


Fig 181 —Typical distribution in a case of 5 years duration The condition first arose when the patient was in the Middle East

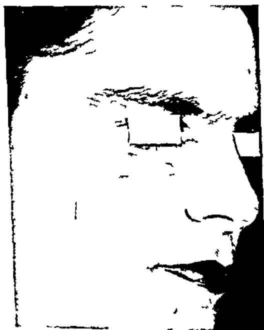


Fig 182 —Early lesion (6 months history) of erythematous type

CHAPTER 26

LUPUS ERYTHEMATOSUS

HUGH GORDON

CLASSIFICATION OF TYPES

ACCORDING to Macleod (1924) this disease may be regarded as one of the commoner of the uncommon skin diseases he gives the incidence in 5 000 cases of patients with skin diseases as 1 5 *per cent*

The term lupus erythematosus is usually applied to the chronic discoid type of *the disease which is by far the commonest Generalized* forms, however do occur and produce a clinical picture differing widely from the simple chronic discoid types The simplest *classification of the disease is* O Leary s *(1934) which is* as follows (a) chronic discoid or fixed type (b) generalized discoid type (c) subacute disseminated type, and (d) acute disseminated type

Chronic discoid or fixed type

Site

This type of lesion usually occurs on the central regions of the face having a predilection for the nose and cheeks, often producing the well known butterfly eruption It not infrequently affects the scalp and the ears (Fig 181)

Clinical signs

The lesions have four characteristics which are variably present in any given lesion These are (1) a fixed erythema (2) stippling , and scaling of a particular type (3) atrophy and scarring and (4) telangiectasia

Fixed erythema —In a diagnosable case the redness which is the most essential characteristic of the disease is fixed that is it does not come and go from day to day or vary in size except by a very gradual peripheral enlargement Its border is clearly definable and in old lesions is usually slightly raised and indurated The earliest diagnosable lesion is usually about 1 centimetre in diameter and during the course of months or years this may increase to 3 or 4 centimetres the lesion is usually roughly circular or elliptical in shape Two or three lesions frequently coalesce, and may finally cover quite a large area of the face (Fig 182)

Stippling and scaling —The follicles of the erythematous plaque are enlarged and filled with a horny plug giving rise to a stippled effect that is white dots on a red background *In older lesions this follicular hyperkeratosis thickens* and scales are formed which are firmly adherent and have inverted cones on their under surface *going down into the follicles The scaling* varies being slight in some cases whereas in others it may be a very prominent feature It is always *markedly adherent* however and difficult to remove except by a scalpel point which usually causes bleeding (Figs 183 184 and 185)

Atrophy and scarring —Even in early lesions atrophy may be observed *in the* central portion later this becomes more marked and is an important diagnostic feature Cured lesions may leave no trace more usually a permanent scar remains which is thin white and pliable and slightly depressed

Telangiectasia —Telangiectases are common and are usually situated at the edge of a lesion but they may extend throughout it In one rather uncommon type of

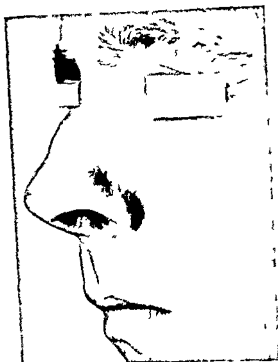


FIG 185 —Stippling showing on nose This is a typical case of 18 months duration

lesion scaling is very slightly present and what appears from a distance to be a marginated erythema on closer inspection is found to be entirely telangiectasis

Incidence symptoms and course

Women are more commonly affected the average age being between 25 and 50 years Cases in the teens do however occur

Subjective sensations are often slight being only mild discomfort and a sensation of burning Irritation is but rarely a marked feature

The course is essentially chronic and relapsing persisting over many years In mild early cases the disease frequently clears up and leaves no scarring In others it may progress relentlessly and give rise to considerable disfigurement due to

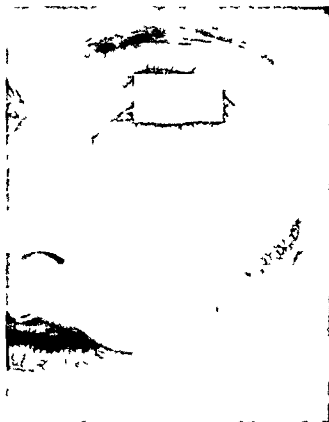


FIG 183 —Extremely keratotic lesion in a case of 2 years duration

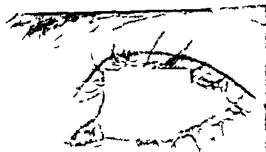


FIG 184 —A close up view of a lesion occurring under the left eye

multiforme Other lesions appear fairly rapidly on the thorax and trunk and become marginated infiltrated and possibly haemorrhagic Lesions occur commonly on the mucous membranes including the genitalia and are often bullous or ulcerative Alopecia of the eyelids and scalp is common If the disease settles down into a period of quiescence some of the face lesions eventually present the characteristics of the chronic discoid type

Constitutional disturbances

In general there is grave toxaemia with a high temperature of the septic type Anaemia and frequently severe leucopenia are common Gastro intestinal and



FIG 18 —The same patient as in Fig 186 Slight scarring is visible at the finger tips

renal symptoms may occur together with arthralgia and arthritis A curious and striking phenomenon is a false positive Wassermann reaction Various heart murmurs are present with and without an endocarditis which may be either bacterial or non bacterial

If the skin manifestations are slight and the constitutional symptoms severe the diagnosis of lupus erythematosus is clearly extremely difficult and indeed it has been suggested that this acute fulminating type is a different disease more properly associated with acute dermatomyositis Many cases however have been recorded in which transference has been noted from the chronic discoid type to the acute or subacute disseminated form Montgomery (1940) analysed 154 cases of acute lupus erythematosus and found in 35 *per cent* a previous history of lesions of the fixed discoid type In 30 cases of the acute type 27 of the patients died within a period of from 2 weeks to 2 years after the symptoms of acute dissemination occurred The mortality rate in the subacute variety was 47 *per cent*

DIFFERENTIAL DIAGNOSIS

Chronic discoid type

Early lesions may be undiagnosable from nondescript erythemas seborrhoeic dermatitis and psoriasis without prolonged observation Lesions resembling erythema multiforme may be a prodromal form of the disease

shrinkage and scarring of the skin particularly when the nose and the ears are involved Cartilage is not involved

Lesions on the scalp cause permanent alopecia and tend to be less erythematous *but more keratotic (Fig 186)*

The red margins of the lips *are quite frequently affected and* in this case, the appearance of the lesion may not be quite characteristic It appears as a well

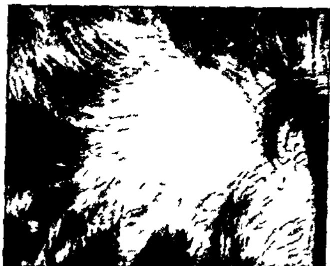


Fig 186—Showing a patient with a 15 year history of lupus erythematosus of face scalp and hands The facial lesions are cured but those on the scalp are still active Stippling is just visible

defined greyish hyperkeratosis often superficially eroded with a bluish red inflammatory edge *Diagnosis of the lip lesions when they are the sole exhibit* (which is rare) can be very difficult

Generalized discoid type

This differs only from the chronic discoid type *in that an overflow occurs from the usual sites of selection to other parts of the body* usually the thorax upper extremities and hands In general these peripheral lesions tend to be more erythematous and less scaly than those on the face A particular feature on the *hands is the* presence of fixed areas of telangiectasia at the roots of the nails Constitutional symptoms are absent but a generalization of the skin lesions is a danger signal of *their possible occurrence* (Fig 187)

Disseminated types

The acute and subacute disseminated types differ only in the severity of the symptoms and their mortality rates and can therefore be taken together

Skin manifestations

An acute dermatitis of the face with oedema *is usually an early and striking* feature, it may be erysipeloid in appearance or resemble an acute erythema

A very strong predisposing factor in the production and aggravation of the skin lesions is undoubtedly exposure to bright sunlight and to a much lesser extent trauma of all sorts

In many cases there would appear to be an underlying fragility of the skin fair haired types on the whole being more commonly affected In one case closely observed over many years psychological factors appeared to produce recurrences

Tuberculosis

Although for many years this was the accepted aetiology repeated attempts to prove a direct tuberculous origin have failed The undoubted value of gold salts in treatment is inconclusive since as suggested by Wigley (1932) their action may be indirect caused by the excretion of gold through the skin

Calciferol in high dosage although very effective in the treatment of lupus vulgaris is a failure in lupus erythematosus Conversely this does not disprove the toxi tuberculide theory since it appears possible that the beneficial effects of calci ferol in lupus vulgaris is also through an indirect action on tuberculoid tissue which is not present in lupus erythematosus It appears certain that in some cases at any rate tuberculosis i responsible for the appearance of lupus erythematosus The following is such an example

A patient with a long antecedent history of various tuberculous infections developed a well marked lupus erythematosus round a discharging tuberculous sinus of the neck The lupus erythematosus cleared up very quickly with gold injections but he sub equently developed a typical lupus vulgaris on the face which disappeared rapidly when calciferol was given

Other cases have been reported in which both diseases were present in the same patient and the author has observed two cases in which a single lesion (the only one present) has changed from one disease to th^e other

Streptococcal

Barber (1915 1919) is chiefly responsible for having pointed out that in Great Britain at any rate streptococcal infections of all sorts frequently accompany eruptions of lupus erythematosus These are most usually in enclosed sites such as teeth sockets nasal sinuses and tonsillar crypts but may be in the intestines or in other organs This is generally agreed and although high hopes were entertained of more permanent cures with the introduction of the sulphonamides these have been only very partially borne out More recently penicillin at any rate in the chronic cases has proved on the whole disappointing

Successes have been reported by the use of sulphonamides in huge doses in some of the acute fulminating cases In others they have been ineffective or have even produced a worsening of the condition In general a survey of the reported acute cases is very disappointing from all angles since it might have been hoped that post mortem examinations in the not inconsiderable number which have come to necropsy would have helped in elucidating the aetiology This has not been the case Further blood cultures taken at the height of the disease are frequently nega tive although streptococci of all sorts have been found more frequently than any evidence of a generalized tuberculosis

In well established lesions rosacea lupus vulgaris rodent ulcer and tertiary *syphilide present the chief diagnostic difficulties*

Rosacea frequently produces a butterfly erythema which however is ill defined diffuse and fades into normal skin It is frequently pustular and never produces scarring

Lupus vulgaris is characterized by apple jelly nodules which stand out when the redness of the lesion is obliterated by firm pressure with a glass spatula Such nodules are present in the middle of scarred areas but occur chiefly at the edge Scaling is usually slight and never produces stippling

Rodent ulcer always presents a hard white cartilaginous rolled edge Ulceration is exceedingly uncommon in lupus erythematosus

A tertiary syphilide is usually composed of nodules and ulceration arranged in serpiginous fashion with central scarring Scaling is slight or absent

Acute disseminated type

Until the lesions present characteristics of the discoid type the diagnosis can only be suggested The picture may well be that of a pyrexia of unknown origin with indefinite erythema Erysipelas is controlled by the sulphonamides, and an acute erythema multiforme is seldom febrile In obscure diseases, such as acute dermato *myositis or Libman Sachs syndrome a fatal termination may supervene* without a definite differential diagnosis being reached

HISTOLOGY

The histology is reasonably constant and may be an important factor in establishing the diagnosis in the acute cases though it is seldom necessary in the chronic *discoid lesions*

The epithelial changes are mainly oedema with formation of horny plugs in the follicles and later *atrophy of the epidermis*

In the corium the changes are of a reactive nature, a dense perivascular infiltration of round cells being found round the vessels and appendages particularly on the upper part The lymph vessels are dilated Histological changes typical of a *tuberculous reaction are not found though an occasional* giant cell may be seen

AETIOLOGY

It is generally agreed that the skin manifestations are an allergic response to an infective agent of systemic origin Barber *(1941) summarized the possibilities as* follows

(1) Lupus erythematosus is a cutaneous reaction *to an unknown infective* organism the association with tuberculosis or streptococcal infections being fortuitous or indirect

(2) It is a cutaneous manifestation of active or latent tuberculosis usually regarded as a *toxi tuberculide*

(3) The eruption is non specific and may be produced by a variety of infective organisms or toxins

Nephritis is also a complication and gold should not be given to patients with impaired renal action The urine must be tested for albumin before each injection Blood counts in the middle and at the end of a course are also advisable since very rarely agranulocytosis occurs with gold therapy and leucopenia is also a danger signal

Bismuth salts

Injections of bismuth salts are much safer than gold injections but are probably less effective If improvement occurs it is apt to be slower and focal reactions in the treated areas are less common

The only ill effect of note is gingivitis which can be prevented by care in oral hygiene

The drug and dose recommended is Bisoxyl 1 5 millilitres (bismuth oxychloride 10 per cent) or a comparable amount of bismuth metal given at weekly intervals for 8–10 doses The course is repeated with an interval of about 6 weeks

If a considerable improvement has not occurred at the end of two courses, it is not worth while to pursue this line of treatment

Sulphonamides

Trial of the sulphonamide drugs was indicated on the assumption that a strepto coccal infection latent or direct was a factor in producing the skin lesions On this assumption it would appear logical to treat surgically any latent focus that is possibly present such as infected teeth sockets or a silent antrum Such treatment alone does occasionally produce considerable improvement but on the whole the results have been disappointing It was hoped that subsequent administration of the sulphonamides would neutralize any secondary foci of infection which might have been formed from the original focus if of sufficiently long standing

In cases in which the sulphonamides were used the dosage recommended was small but continued over months if well tolerated and blood counts were normal Sequeira Ingram and Brain (1948) suggest 0 5 gramme thrice daily for one week and then twice daily for 6–8 weeks It seems possible that a shorter and sharper course such as 24 grammes given over a period of one week and then stopped may be preferable

In view of the aetiological uncertainty of the disease it would appear to be safe advice that any obvious focal sepsis in the chronic discoid cases should be treated and sulphonamides given a trial In a few patients in whom gold has failed short courses consisting of 20–30 grammes given once or twice a year over 5 years appear completely to have controlled the disease In another case the serial removal of teeth appendix and tonsils on each occasion produced considerable improve ment but subsequent and complete relapse occurred even after treatment with sulphonamides within 1 year

Quinine

Quinine is the oldest method of treatment given in doses of 2–5 grains by mouth frequently combined with local inunction of iodine in the form of Collosol Iodine

TREATMENT

If the aetiology is uncertain of necessity so must be *treatment* Sequeira Ingram and Brain (1948) assess 30 per cent as cured, 30 per cent improved and 40 per cent unimproved Assessment of cure is difficult, since relapses occur after years of apparent quiescence but in the author s opinion the percentage of apparent cures *in early cases* is perhaps higher than the above figure Specific remedies in order of preference are (1) gold salts by injection, (2) bismuth salts by injection (3) *sulphonamides, given orally*, and (4) quinine, given orally

In addition, local applications and surgical procedures must be included

Gold salts

Standard preparations are Myocrisin (sodium aurothiomalate) intramuscularly and Novacrysin, the same as the original Sanocrysin (sodium aurothiosulphate) *given intravenously As a rule they are given in courses of weekly injections for* 8–10 weeks with an interval of 1–2 months between courses

Novacrysin *injected intravenously has seemed more effective than Myocrisin* but is possibly more toxic

The *question of dosage is obviously all important in view of the possible toxic* effects and is by no means as yet conclusively settled During the last 10 years the doses currently recommended have decreased in size and—it has appeared to the author—so have their efficacy The initial injection should certainly not be higher than 0 025 gramme the usual dose being 0 1 gramme and the highest 0 2 gramme It must be admitted that these doses are higher than those recommended by many authorities Andrews (1946) suggests a course of 10–20 injections gradually increasing to 0 05 gramme

A focal reaction in the lesions is a hopeful sign consisting in an increase in redness and irritability If gold is going to be effective improvement *should be clearly* apparent by the end of the fourth or fifth injection If there is only slight or *indefinite benefit at the end of 8–10 injections of the dosage recommended* it is probably unwise to continue

General malaise is not uncommon immediately after an injection and is not necessarily important If however it increases it should be regarded as a prodromal manifestation of serious intolerance such as an oncoming exfoliative dermatitis, which is the bugbear of gold therapy Warning signals may be present in the form of a general irritability of the skin after an injection or more definitely a mild erythematous rash occurring usually on the flexures Should such a rash persist for a week or show any sign of increasing it is not safe to give any further injections of gold A well established *exfoliative dermatitis is a gravely incapacitating* disaster which may persist for anything up to 4 months with the possibility of a fatal outcome, usually from broncho pneumonia The outlook in the treatment of this disease has recently been much improved by the introduction of *BAL* (Simpson 1948)

Exfoliative dermatitis usually occurs during a course of treatment and by no means always depends on high total dosage Occasionally however it appears 4–6 weeks after the termination of a course

CHAPTER 27

BULLOUS ERUPTIONS DERMATITIS HERPETIFORMIS AND PEMPHIGUS

C Howard Whittle

INTRODUCTION

Bullae may arise from many banal causes A simple and common form which need only be mentioned here in passing are the blisters which form on the hands or feet following a period of mechanical friction such as from rowing or from a chafing shoe and the bullae which form after a scald In the one case the stimulus is mechanical in the other thermal damage is inflicted on the living tissue of the epidermis and upper layer of the dermis histamine like substances are liberated from the damaged cells and inflammation follows with vascular dilatation and exudation of serum so intense and localized that the epidermis or a part of it—sometimes only the horny layer—is separated and lifted by the fluid Pain and tenderness accompany these changes

Other agencies can produce similar changes in the skin for instance the *Staphylo coccus aureus* may invade the skin and by its toxins produce a bullous eruption in new born babies (bullous impetigo or pemphigus neonatorum) This is a highly contagious condition liable to sweep through a maternity ward or nursing home The infective agent the staphylococcus seems to have acquired an unusual habit because it shows no tendency as is its wont to produce boils or carbuncles in those affected and even adults (a nursing mother in one of the writer s cases) may be infected and exhibit similar blisters

There is a type of large blister which may arise during the summer months on the lower parts of the legs of girls and young women sometimes following an insect bite This blister may be single dome shaped tense and fairly thin walled Horse flies and mosquitoes may be responsible It seems probable that these patients are reacting in a peculiar way to a banal injury which in most people would cause only mild and transient weals and that such subjects possess or lack some constitutional factor in their make up which favours this reaction

In all types of bullous reaction so far mentioned a local agent has been respon sible for initiating the reaction But in certain bullous forms of erythema multi forme in dermatitis herpetiformis and in pemphigus vulgaris no such agency has been discovered Bullous types of erythema multiforme however afford a link between conditions with obvious local trauma as the agency and conditions such as dermatitis herpetiformis and pemphigus in which no single toxin or other agency has yet been incriminated For it seems certain that at least some cases of erythema multiforme are produced by toxins reaching the skin from remote foci of septic absorption such as infected tonsils teeth or sinuses

or Iodex ointment A patient was seen recently who was affected regularly while in the tropics except when he took quinine as an antimalarial measure

Local treatment and surgical procedures

Lotions and ointments have a limited value as palliatives A calamine lotion with 10 grains of *quinine hydrochloride added* has some protective properties in sunlight, and is soothing and slightly camouflaging Ointments containing 2-5 per cent of salicylic acid are helpful at night

Cauterization by a solid pencil of carbon dioxide snow, or painting with a mixture of snow and acetone has definite value in many cases in which the general measures recommended are ineffective or inadvisable To obtain any result it is necessary to produce a considerable reaction which takes a week or two to subside generally leaving a thin white pliable scar

Patients with small fixed intractable lesions sometimes ask advice in regard to the possibility of a plastic removal In one case, two small lesions were completely excised for serial biopsies, and appear to have remained cured In general however, surgical removal does not appear to be warranted

Treatment in acute cases

Treatment must be similar to that applied in an acute toxaemia In view of the blood changes, transfusions and Pentnucleotide are indicated Montgomery (1940) records successes following cautious x ray treatment to the lymph gland areas

At varying times practically all the measures indicated above as being of value in the treatment of the chronic discoid type have been reported as being harmful in the acute cases Even so in view of the serious prognosis small doses of gold are usually advised in the subacute cases but not in the acute type In the treatment of the acute type sulphonamides and penicillin are certainly justified in view of the nearly 100 per cent mortality recorded before their introduction

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positive Though the iodine is not the cause of the condition contact with iodine in any form should be avoided as it is apt to make the skin worse

Treatment

The treatment of dermatitis herpetiformis is unsatisfactory and can at least be only palliative Treatment in bed with sedatives is necessary in the acute stages or when the condition is very extensive but in a great many cases patients can be enabled to carry on some part of their normal life Arsenic given in full doses internally as the liquor for example 3–8 minims three times a day was the greatest single active therapeutic agent until sulphonamides appeared It is a curious fact that the great majority of cases of dermatitis herpetiformis will respond to sulphapyridine given by mouth The rationale is not known and unfortunately its effect is purely temporary activity starting up again within a day or two of cessation of the drug But sulphapyridine given in small doses for instance 1–3 grammes daily in divided doses will often completely control the condition and can be continued for months or even longer The effect of the drug can be enhanced and prolonged by some of the new antihistamines given by mouth such as Anthisan Antistin and Benadryl If sulphapyridine is used in this way it is advisable that a check be kept on the patient s white-cell count each month or every two months in order that the possible toxic effect on the polymorphonuclear leucocyte production may be revealed at an early stage and the drug stopped accordingly Fever or skin reactions are further contra indications In the writer s experience neutropenia is rare and the treatment is outstandingly successful

Cases which fail to respond to sulphapyridine will usually not respond to the other sulphonamides and for those and for patients who exhibit toxic symptoms from sulphapyridine medication other measures such as shock or pyrotherapy may be tried In Great Britain injections of T A B vaccine are the means most frequently used and they can be repeated in increasing doses once weekly They are often more effective given intravenously in from one fifth to one half of the usual prophylactic dose though the resulting fever is more severe

Among local measures powders and pastes are likely to give most relief and baths which may be medicated with sulphur bran or sodium bicarbonate will have their place X rays are useful in sedative doses for localized lesions and for more generalized eruptions sub erythema doses of ultra violet light may have a considerable temporary antipruritic action

It is important to help the patient to adjust his life so as to avoid as far as possible the mental stresses and strains which tend to bring on an attack The high pressure and over-civilization of modern life are contributory factors and may explain the increased incidence of the condition in recent years

Dermatitis herpetiformis gestationis – hydroa gravidarum

This is really a form of dermatitis herpetiformis but its appearance and recurrence are always associated with pregnancy Its onset is usually in the third month and it may persist throughout the pregnancy but clears at or soon after delivery It may be so severe that occasionally pregnancy has to be artificially terminated but as a rule this is not necessary The causes are not known but mental conflicts

During the first week of an extensive bullous eruption it may be impossible to differentiate between erythema multiforme and pemphigus But the former is a benign condition which resolves spontaneously in a week or ten days, whereas pemphigus is persistent and progressive, and may in many instances prove fatal So that although they may have the common appearance of multiple blisters they are clinically separable entities Erythema multiforme may recur, and characteristically does so, about the same time each year in a susceptible subject, but it does not show the progressive, crippling extension nor the prostration and cachexia of pemphigus

Dermatitis herpetiformis is characteristically a very chronic or relapsing condition of multiple blistering of the skin with smaller blisters little disturbance of general health, and severe itching

Between the two clear cut entities of pemphigus and dermatitis herpetiformis are intermediate forms which may for months defy classification, and most dermatologists are familiar with patients who at one stage show all the features of dermatitis herpetiformis and at another exhibit all the signs of pemphigus vulgaris It is possible that they are two aspects of the same underlying condition though some recent American work claims distinctive diagnostic features by means of serological tests It is also probable that pemphigus vulgaris represents the skin manifestations of a gross and severe though as yet little understood, disturbance of the whole reticulo endothelial system, including the blood forming organ

DERMATITIS HERPETIFORMIS

Dermatitis herpetiformis is a rare disease It is characterized by the appearance in groups and crops as its name suggests of herpetiform blisters on the trunk and limbs Its evolution is accompanied by the most aggressive itching that is encountered in medicine and the blisters are rapidly converted by scratching into excoriations and blood crusts, the desire to scratch is quite irresistible, and scratching brings some relief In a fully developed case the picture is dominated by the scratched papules and blood crusts and the later results of scratching

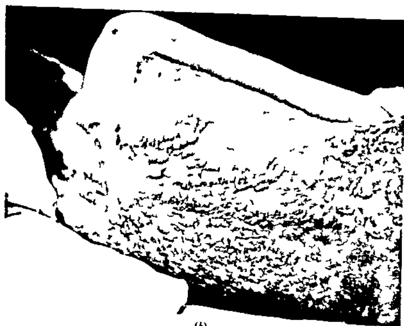
This disease occurs more commonly in young adults but may start at any age It has a great tendency to recur and it seldom affects the general health which remains good in spite of loss of sleep The lesions include not only blisters but also fairly sharply defined erythematous patches some of which may progress to form blisters The blisters are usually small not exceeding one centimetre in diameter and they are remarkable for their contents which are turbid at some stage, the turbidity being due to the presence of large numbers of eosinophils This eosinophilia often has its counterpart in a recognizable blood eosinophilia (10 per cent more)

The late results of an attack are thickening and pigmentation of the skin over the affected areas—lichenification Nothing is known as to the causation of dermatitis herpetiformis, but undoubtedly mental stress worry or shock can as in many skin conditions such as psoriasis and lichen planus precipitate an attack

The course is benign and the disease is never fatal though it may cause severe disability through itching and loss of sleep In these respects it is sharply differentiated from its near relation pemphigus Moreover it is uncommon to find the mucous membranes extensively and severely affected as in pemphigus Many cases show a marked hypersensitivity to iodine and iodides and such tests are often



(a)



(b)

FIG 188.—Pemphigus vegetans (a) Front view (b) back view

and stress appear to play a part, as they do in the non pregnant and treatment is similar Autohaemotherapy is sometimes effective and can be given in doses of 5 millilitres twice weekly and this dose increased up to 10 millilitres

PEMPHIGUS

Pemphigus is a grave, protracted and often fatal condition of unknown causation and it commonly takes the form of pemphigus vulgaris

Senear and Usher (1926) have described a rare type which runs a benign course and which has some of the features of widespread lupus erythematosus and seborrhoeic dermatitis in addition to the large blisters *Pemphigus foliaceus is another* form which is characterized by generalized exfoliation with blisters and may follow the more common form *Pemphigus vegetans is a very rare form in which* granulating masses develop on the site of the blisters

The age group commonly affected by pemphigus is 60–80 years and it is therefore mostly a disease of old age But it can occur much earlier, and during World War II many dermatologists saw cases of pemphigus in young men in the Services and though it is possible to argue that the condition was a separate entity the course and symptoms were identical, not even excepting the fatal termination

Clinical features

The features of pemphigus which distinguish it as a clinical entity are the large bullae arising on apparently otherwise normal skin a similar affection of the mucosa of mouth and vulva and a chronic and intractable course It is possible for pemphigus to affect only the mucous membranes such as the mouth for some time and the diagnosis must be considered in cases presenting intractable sores on the buccal mucosa Wide areas of skin on trunk and limbs are involved and the avoidance of pressure on the abraded surfaces offers a serious problem to nursing (Fig 188)

The bullae which are an inch or more in diameter are formed deep in the epidermis and are the result of inflammatory changes and exudation in the papillary layer of the corium In some cases the whole thickness of the epidermis is lifted by the fluid from the underlying corium This fluid is usually clear and sterile on culture but may later become secondarily infected and turbid

Nikolsky s sign

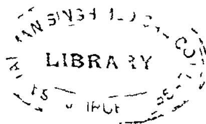
If the finger be pressed firmly on the apparently normal skin of a patient with pemphigus the epidermis or its upper layer will become detached and can be forced to slide over the underlying tissues The sensation is similar to that which is felt in pressing on the skin of a ripe peach It is clearly the result of some loosening of the adhesion between the epidermis and the dermis and recent American experimental work suggests that there may be some toxic agent at work which has a lysing effect on the junction of the two tissues The sign is uncommon in skin conditions, and is confined almost entirely to pemphigus and to epidermolysis bullosa—a dystrophic condition of the skin which is usually hereditary Rarely it occurs in dermatitis herpetiformis

should be supplemented with vitamins especially vitamins B and C the former is best given as whole yeast either fresh or dried (The Medical Research Council has prepared an excellent brand of dried yeast which is palatable and well tolerated)

Every effort should be made to keep up the patient s morale which undoubtedly plays an important part in the course of the illness I have seen a patient whose lesions had all healed suddenly take a turn for the worse after an emotional shock of a trivial nature which could have been avoided had all those responsible for his care been properly aware of the delicate balance in which his health was hanging After weeks of slow and painful recovery he had reached a point at which he seemed out of danger only to plunge rapidly downhill to a fatal issue in a matter of days Such an event is not unique and may be commoner than is generally believed It is only very recently that the effect of the mind on the skin is receiving the attention it deserves

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Diagnosis

The diagnosis does not as a rule present much difficulty if the case is observed over a period of weeks or longer Other conditions associated with bullae such as drug eruptions bullous *erythema multiforme*, dermatitis herpetiformis and epidermolysis bullosa have already been mentioned above It is sometimes impossible to decide between dermatitis herpetiformis and pemphigus, but the former tends to be polymorphic much more itchy recurrent and remittent over many years and to develop smaller blisters Epidermolysis bullosa is a dystrophic condition of the skin which is usually congenital and appears early As it always results from trauma it is sited on areas which get knocked and rubbed such as knees, elbows and shoulders There is an acquired form but it is rare

Treatment

The treatment of pemphigus is always a matter of difficulty In patient treatment is necessary and great patience and perseverance are essential, one of the main problems is the nursing On the Continent these cases are treated by continuous saline baths The patient becomes partially water borne and pressure on abraded surfaces is thus avoided He may spend several days immersed and can read, eat and sleep in comfort The continuous bath also provides an excellent dressing so that discharges are removed and the parts are kept clean The discomfort due to sticking of dressings and the pain caused by their removal are also obviated

In Great Britain an approximation to such treatment is obtained by the continuous moist saline compress as used for extensive burns during World War II but relays of nurses are needed to keep the dressing moist and few hospitals can provide such an expenditure of nurse power The use of Tulle Gras changed frequently is helpful and comforting The mouth must be kept scrupulously clean and the sores can be swabbed over with weak carbolic to relieve pain prevent sepsis and permit the taking of food But even with the most careful nursing these patients are often in constant pain and misery and their general condition suffers and deteriorates

There is no specific therapy Arsenic sulphonamides by mouth and penicillin given intramuscularly may be tried but as a rule they are ineffective For many years Suraminum (*B P*) has been used and a certain proportion of cases respond quite dramatically The writer has in the last five years had a succession of cases all in elderly people and in the majority the lesions have cleared and new lesions have ceased to appear most of them have remained free of recurrence The word cure should be used with as much caution as in cancer and the criteria of cure should include freedom for at least five years Antrypol was the substance used and it is given dissolved in sterile distilled water intravenously twice weekly in doses similar to those used in trypanosomiasis We have used 0 25 gramme for three or four doses then 0 5 gramme for three or four doses then 0 75 gramme The drug should be given with caution and dosage stopped if toxic symptoms or albuminuria occur Relapses may require a further course Some of the poor results recently reported in England with this substance may have been due to inadequate dosage There have been favourable reports following the use of blood transfusions more especially with blood taken from patients who have recovered from pemphigus but it is possible that healthy whole blood is equally effective in supplying certain factors which seem to be lacking in the fully developed case For the same reason the diet

should be supplemented with vitamins especially vitamins B and C the former is best given as whole yeast either fresh or dried (The Medical Research Council has prepared an excellent brand of dried yeast which is palatable and well tolerated)

Every effort should be made to keep up the patient s morale which undoubtedly plays an important part in the course of the illness I have seen a patient whose lesions had all healed suddenly take a turn for the worse after an emotional shock of a trivial nature which could have been avoided had all those responsible for his care been properly aware of the delicate balance in which his health was hanging After weeks of slow and painful recovery he had reached a point at which he seemed out of danger only to plunge rapidly downhill to a fatal issue in a matter of days Such an event is not unique and may be commoner than is generally believed It is only very recently that the effect of the mind on the skin is receiving the attention it deserves

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CHAPTER 28

PSYCHOSOMATIC DISORDERS

W J O DONOVAN

GENERAL REVIEW

IN DERMATALOGY pathological processes commence and progress in a manner in no way different from pathological processes in other organs of the body The dermatologist surgeon and physician are equally familiar with congenital abnormalities with degenerations, with inflammations with problems of parasitology with injuries and neoplasms

There is, however a large field of dermatological practice in which cases do not develop in a manner familiar to those who specially study diseases of the liver or of other organs An inflammatory process in a viscus and most inflammatory *processes in the skin run a course that experience enables one to time This course* may be fulminating or slow it may end in a complete *restitutio ad integrum* or may leave scars or it may be complicated by local adenitis, lymphangitis and fever The skin can react to trauma or to inflammation and the process come to an end whether it be an acid burn a tuberculous infiltration or a syphilitic gumma But in many cases the skin does not behave in this way

The skin may sustain an injury and not heal In the same patient there may be a leg lesion that followed a most clearly remembered and meticulously recounted minor *injury 10 years before* and *whilst the leg has not healed a tooth or an* appendix may have been removed surgically and healed most satisfactorily

Patients are seen showing healed scars of acid or electric burns which scars are not known to break open spontaneously again over interminable years but it is a common experience for the skin to receive an industrial injury and from a local *injury to develop on all four extremities a symmetrical* eruption which in the patient s own words comes and goes irrespective of treatment and the patient is unable to say why it repeatedly comes again

In angioneurotic oedema patients with no known or ascertainable *sensitiveness* to food or to contacts swell up with gross oedema that obscures the countenance and makes them unrecognizable This goes and recurs again for years Patients with alopecia areata lose hair in handfuls regrow it and lose it again and histology bacteriology and biochemistry throw no light on the nature and cause of this *affection*

This haywire behaviour of a living organ compels the student of dermatology to review his list of causative and controlling factors in disease and to add of necessity the factors that are taken into account by a *practising psychiatrist*

Progress of terminology

The student of *dermatology must first be grateful to the masters* of the past who with the help of wax models paintings life drawings and photographs established

great and accepted patterns or norms of many skin diseases This recognitional dermatology reached its height in Edwardian days and called for a nosology that was singularly apt and descriptive Impetigo recorded a swiftness or impetuosity of onset sycosis a resemblance of many minute yellow pustules to the pips in a fig dermatitis bullosa et striata pratensis described little or large blisters arranged in straight lines occurring in patients who had sat in meadows and a crowning effort of descriptive nomenclature is the term parapsoriasis lichenoides chronicus et varioliformis acuta With mental pictures in mind one disease was sometimes named in terms of the appearance of another and so we find psoriasiform seborrhoea and lupoid sycosis

The next stage was to take into consideration all factors in addition to the appearance that the patient presented upon examination and a change in outlook can be seen in the two terms lichen simplex chronicus circumscriptus of Vidal and nevrodermite a lichen comparable to the moss on a wall simplex because the dermatologist s thinking did not penetrate below the surface chronicus was a true statement of the time factor and circumscriptus recorded that the lesion had a clearly limited margin When this lesion was termed a nevrodermite then the psychological make up of the patient was being weighed in the balance in addition to the dermatologist s visual picture

Psychological factors in the course of skin lesions

The Workmen s Compensation Act which ended in July 1948 brought to light the remarkable curative effects of financial compensation that healed intractable skin lesions in patients who had been in and out of dermatological departments and beds for months and years The appearance of case after case of this nature slowly convinced the dermatologist that in his speciality he was handling something very comparable to the railway spine which the surgeons soon decided was not a surgical accident

Records of the quick healing of inveterate dermatoses once the patients had been released from the obligations or risks of military service in World War II was a further indication that the patient s skin disease was often an expression of his resentment at being in an environment and way of life that he disliked and was in addition a means by which he scratched his way out of the common risks with a good conscience

An obsessional itching seems to the author to be an escape mechanism so that like a mouse a humble man may scratch his way out of a difficult situation when a larger and stronger animal or man remains in captivity in the situation in which major events have *nolens volens* placed him Itching and scratching may be an orgasm of sensuous delectation

Need for wide clinical observation

A factor which the physician must note and pay great attention to is a lack of proportion between signs and symptoms Something is lacking in clinical observation when a virgin with a swollen stomach is diagnosed as being advanced in pregnancy some surgical acumen is lacking when a knee is operated on and no lesion is found within and the dermatologist must be impressed with the fact that

many patients complain of *intolerable and long continued itching* using words of terror, agony and distress and at the same time inspection of the sites complained of, whether it be anal skin neck or ear, show nothing or at the best a recent scratch abrasion



Fig. 189 —Stocking erythema in a patient aged 46 years suffering from nervous breakdown Varix *removed 10 years previously*

The least abnormality in conduct or manner should lead to a quiet and sympathetic psychological assay in any case

Mrs — aged 60 years greeted the writer and his students on the ward round with a disinheriting countenance Asked why she said she did not like *students* This is so unusual that it merited some analysis

Her history showed that she had been sent to a convalescent home on psychiatric advice there she developed an urticarial eruption

A week later her countenance was kindly her rash had disappeared and she *volunteered to the students that all her troubles were domestic* She was overcrowded by a bronchitic husband and a bronchitic daughter in a town apartment where she had lived since she was bombed in 1940 and was certain that if she could re establish a home in the country her nervous state and her liability to an *eruption* would cease

A red leg wet or dry is a clear clinical picture and our fathers described it as eczema madidans But a patient with such a condition recites with solemnity like a policeman giving evidence before a magistrate that 7 years ago on a remembered day at a remembered time a heavy weight fell and grazed his leg which has not healed since This preciousness of remembrance coupled with a non healing injury makes the clinician dubious whether the red leg he sees is a product of bacterial invasion Bacteria may be found in an abundance on the surface and Ehlers of Copenhagen struck a note of warning at the end of his very long professional career when he described this condition as pathomimia cutanea It is now in Great Britain called stocking erythema (Hartston) and exists without any discoverable varicosities to which so many leg affections are indifferently attributed (Fig 189)

The quick speech the staring eye and the egotism of a patient are associated physical signs It is notorious that a patient with pruritus ani will disrobe himself swiftly and stoop in front of the physician before any greetings have been exchanged He will contentedly expose his posterior to a class and when the clinical interest in the absence of any physical signs has evaporated he will slowly dress and wait about the physician s table listening hungrily for what may be said to the students that he may add it to his store of material for contemplation

At times the patient will spontaneously and clearly say that his swelling of angioneurotic oedema or his anal itching or bursts of weals or redness or exudation of head and neck corresponds with busines worries approaching examinations or housing difficulties

Nervous dysfunction as causative factor

There are diseases in which a nervous functional element is accepted as causative Spasms of deep crowing breathing until breathlessness arrives associated with a tetany of the cramped extremities may be found with red moist superficial in tractable skin lesions of the extremities of the face or of the trunk and the psychiatrist s explanation of the carpo-pedal spasm is equally applicable to the skin eruption that is sometimes a clear pompholyx

Tompkinson (1924) described a series of cases of alopecia areata associated with squints and in these in tu n he traced their occasion definitely to marital disharmonies

The student will then observe that bromides and barbiturates opium and morphine and prolonged narcosis or twilight sleep are part of the therapy of healing skin lesions In addition he will see patients who heal in hospital relapse in their home environment and again heal in ho pital and such patients if told the date of their discharge exhibit a profuse eruption the night before their discharge is due Such repeated and familiar experiences compel the skin physician to take a psychiatric view of his work as well as the view of a morbid anatomist or a bacteriologist and this view or analysis is added to a recognition of clinical pictures Many of these patients have knee jerks that seem to reverberate through trunk and arms others have unceasing and rapid speech best described as logorrhoea they have trembling hands but no visible thyroid enlargement and in the group we are considering we can nearly always elicit Charcot s triad of

suggestion anaesthesia of the conjunctiva, anaesthesia of the soft palate, and anaesthesia of the forearms to pinprick and even to transfixion by a surgical needle

The mechanism if so gross a word may be used controlling the circulation and reactions of these skins is far from clear

Wittkower (1947) has given great thought to this point and has said that until more is known concerning the exact relationship between the cerebral cells responsible for conscious and subconscious thought and the centres responsible for somatic reactions discussion can only be speculative The implication that cerebral cells are responsible for thought should be discussed very deeply but it is not a dermatological problem and its answer is with the philosopher

Krestin s paper on the seborrhoeic facies in post encephalitic Parkinsonism opens an avenue of thought that needs further exploring He wrote in 1927 and Wittkower (1947) rightly says that in the ensuing years our knowledge of this matter has not been advanced

Before examining the skin lesions we will have noticed licking of the lips twiddling of the fingers biting of the lips tears in the eyes, twitching of the facial muscles drumming of the feet, a forehead that is perpetually lifted into parallel creases and a rocking from one hip to the other or to and fro These are signs to be *noted and regarded as just as important as the appearance of the skin lesions* of papules blisters or ulcers or scarlet, oozing, symmetrical irritable patches

Sociological considerations

The psychopathic personality is not always evident on the surface and the family history will supply the missing clues The family is a unit for the right medical consideration of any case and happiness or unhappiness in the family or insecurity of the family position must be known Mental breakdowns hysterical attacks insanity epilepsy or overweening ambition in others of the family may be often accepted as part of the patient s own make up

At a consultation the patient s story should be directed to the description of relationships with his family and in laws and the persistence of undue and unseemly maternal or paternal dependence Mother fixation leads many a young *woman to develop cheiropompholyx in order that she may leave* her workshop or office and return to the protection of her mother s skirts Over long hours in the *medical* and nursing profession restlessness an unhappy marriage, a story of a weak stomach or of an American bowel or a past tic dreams sleep walking and financial worries recent catastrophes and accidents, are as much part of the history of a case of cheiropompholyx as are irritation and eruptions Many patients will gladly say that they are highly sensitive few will say they are egocentric Many regard their professional life or business developments as a ground of continual vital conflicts *mors et vita duello* is a constant background to all their efforts

ECZEMA

It is timely now to call to mind the contemptuous reference to the term 'eczema first used by Douglas Hyde and then adopted and maintained for decades by the great Sir Norman Walker (1925)

Eczema is a term which has long been and is still commonly applied to any wet or scaly inflammation of the skin of the cause or nature of which the observer is ignorant Is it not clear that the word eczema ha. outworn its usefulness?

The word eczema in the mouth of the expert has become a feature of the man in the street of the advertiser and of the charlatan The doom of the word is probably written It will survive where it belongs with no greater repute than attaches in general to the outworn or discredited Eczema is a name which is a cloak for ignorance and while searching for a cause we should endeavour to rescue from under its folds groups of cases which follow definite lines

Such a group has now been outlined here

An eczematous skin may be a manifestation of an hysterical state an escape mechanism and an expression of a fixed idea

H was a young soldier of lean build sad voice and somewhat melancholy facies He had a papular eczema of his limbs at times exudative that responded to no local treatment nor to heavy sedation under observation in hospital for many weeks A dermatologist suggested that he was allergic to his own sweat Remember that the laity understand the significance of allergy with a clarity and certainty that no doctor possesses This patient was patch tested with lint soaked in the sweat that dropped visibly from his armpits and after 12 hours the patch test showed a vivid scarlet reaction

For sweat was substituted normal saline and squares and circles of a scarlet colour were the reaction to any patch test with normal saline prepared in the hospital laboratory and applied by the medical officer in person Normal saline was dropped in each eyeball overnight next morning the whites of the eyes were scarlet

It was then thought reasonable to see how the patient reacted to a prolonged bath of normal saline This was tried The patient sat all day and had his meals in a bath of warm normal saline solution His skin gave no reaction whatsoever

It is fair to conclude from this that though his mind in some obscure manner could produce a reaction on a small area of skin a boiled lobster like reaction by the whole body was outside the ambit of this patient s conceptions

This was a locus classicus of a patient who found separation from his mother and from his wife intolerable and Army conditions of life unsuited to his temperament The scratching of his eruption was an escape mechanism which finally achieved his end He returned to England his doctors remained in the desert

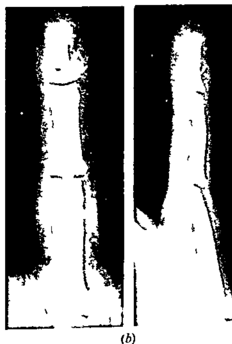
DERMATITIS ARTEFACTA

There is quite a special and clear group in which the eruption is bizarre (Fig 190) There are circular triangular or parallel sloughs or blisters on the left arm and not on the right unless the patient be left handed Occasionally a pink snail track ending in a blob of redness is clear evidence that the patient has been applying acid to herself (Fig 191) and it has overrun Patients have been discovered sitting on hot water pipes and so producing blister eruptions others shave the front of the hair off with a safety razor and others pluck and eat their hair trichotillomania

This group is spoken of as dermatitis artefacta a condition the existence of which the lay public and professional lawyers have the utmost difficulty in giving any credence to yet all practising dermatologists recognize these artificial eruptions



(a)



(b)

Fig 190 —Dermatitis artefacta the result of litigation and moral conflict in a patient aged 38 years (a) external appearance of lesions (b) skiagram showing spicules of enamel fragments



Fig 191 —Dermatitis artefacta in patient aged 54 years showing whitened skin from which there was a carbolic odour

at sight To recognize these is not enough their cause must be sought in an environment from which the patient wishes to be freed or in a long rest from labour in which rest the patient delights or in a simple pleasure derived from puzzling the learned or in a split personality

Experience shows that neither rank nor education high intelligence devotion to duty or to the home nor the most exemplary character excludes the possibility of self infliction

Patients of this type attract the sympathy of friends relations and nurses and a hospital sister may have served a dermatologist faithfully for years but as day after day passes and she fails to discover the cause she in turn begins to think the doctor wrong and goes over to the side of the maligned patient

Such patients said Walker (1925) must be stripped stark naked and must be left without even a handkerchief to weep into and while they are bathing when they must be supervised their room and belongings must be searched for the excoriating agent acid or sandpaper with the thoroughness of a Sherlock Holmes

When the doctor and his nurse are agreed the difficulties of the case are not over for the mental disturbance is deep and will crop out later in some other way These patients often have a somewhat split (schizophrenic) personality they are known to deny soon after their apparent cure that they ever met the doctor who studied their case so repeatedly in hospital

Two leading cases should be recorded here

> Miss L H aged 23 years arrived with a letter from her doctor saying she had a blister eruption that he could not subdue and asked that she might have every attention as she was a girl well thought of in his village and sang in the choir An immediate diagnosis of dermatitis artefacta was made because of the irregular distribution and shape of the blisters which gave a bizarre unclinical picture
>
> Weeks went by in hospital the blisters still appeared and all the clinical entourage except the writer wavered in their diagnosis and lost faith in their teacher
>
> After 5 weeks the atmosphere of the ward round was entirely changed Sister who thought that an innocent girl had been sadly maligned said the girl was indeed wicked she had been noticed to sit herself against the steam pipes in the bathroom
>
> This patient was then returned to her village with an explanatory note to her doctor and the important point in this case lies in his reply in which he said that of course he accepted the expert s opinion but could not understand it as she sang in the choir
>
> The second case was of a domestic servant aged 19 years taken by the writer to Dr James Harry Sequeira at the height of his professional career
>
> The patient was plump apparently simple minded and had on the left forearm circular ulcers of a uniform size clearly self produced by dipping a halfpenny into an acid and tying it on to the skin
>
> Dr Sequeira demonstrated this case as a dermatitis artefacta to his many students together with photographs of other similar cases When I led her away I asked her what the physician thought of her trouble and most contemptuously she said 'The old — thinks I did it myself' There was a complete dissociation of herself from all responsibility

Facies as clue to diagnosis

The appearance of these patients is often a clue to the diagnosis A lesion may be covered but the patient s face is that of Mona Lisa not innocent but if

I interpret it rightly smug impermeable and imperturbable complacent guilt No doctor *handling any case of this sort should* attempt to issue a certificate to this effect or to give evidence before a court of high or low degree unless he has fortified himself with consultations and photographic records both the lay and legal mind have the utmost natural resistance to accepting the doctor s view that patients injure themselves *The relations' minds in these cases are* closed to such a suggestion A mother brought for advice a girl aged 11 years with coal black crescents below her eyelids I removed one with an ether swab and the mother most innocently observed, All the doctors do this but it always comes back again

ALOPECIA AREATA

Alopecia areata is described in another chapter and it must be sufficient here to say that the onset of repeated outbreaks can be associated, often with certainty with unpleasant happenings a financial loss a fire a motor accident or a painful secret hidden or disclosed

It is important to recall the many theories that have received professional approval as to the causation of alopecia areata Toxins reflex action nerve palsy contagion and tropho neurotic theories have been produced and they have had their day As late as 1926 Gray recorded the current view that it was probable that the disease is an inflammatory condition and the nature of the irritant is unknown But MacKenna *(1927)* described the case of a physician who had recurrent attacks whenever he was working hard for examinations He recorded alopecia in a soldier after a nerve racking bombardment but seems to have doubted the validity of this view when he added that the soldier had had a previous attack in childhood *Hairdressers have never broken from their tradition that alopecia areata* is a purely nervous malady

Rutherford (1920) recorded the high incidence of alopecia areata among people in German occupied Belgian villages in World War I and in the same war alopecia areata was colloquially termed alopecia air radiata *at the time of Zeppelin* air raids over London

When professional opinion has been so variable and popular opinion so constant it is not unreasonable to think that the psychiatric explanation of this disease fairly holds the field

Alopecia totalis

It is widely accepted that a more severe type of alopecia areata with a confluent loss of all hair—alopecia totalis—often and very definitely follows shock *(Fig 192)*

In women these patients are generally thin quick of speech and facile in their emotional display They complain of depression sinking feelings palpitations insomnia and excitability Their knee jerks are glib their extended hands continuously tremulous their conjunctivae and soft palate are insensitive to touch and their forearms can be transfixed by a surgical needle without their admitting consciousness of it Such patients say they are great worriers, their mothers recall that in childhood they were nail biters or teeth grinders and bed wetters

Some patients when they see a mental stress ahead accurately foretell that it will cause them a loss of hair When talking freely they will occasionally volunteer that they have for years been made wretched by cruel thoughts or inner religious trials and conflicts

In men the human type is not so constant Many are like the women constant and profound worriers but some with placid facies deny all consciousness of



FIG 19? —Alopecia areata in a patient aged 14 years His hair fell the day after a jam jar had struck his head He had previously been bombed out

nervousness they are commonly over anxious they may say they cannot relax and some are abnormally reticent and shy

The very many different treatments for this disease varying from tonsillectomy to painting with a varnish of thorium X are indicative that suggestion is more potent for treatment than is any specifically designed therapy

URTICARIA AND ANGIONEUROTIC OEDEMA

Urticaria and angioneurotic oedema may be considered together for the larger oedema may develop as a sequel to the lesser and both diseases have a common background

A large group of urticarial cases indubitably follows the ingestion of unsuitable foods some cases follow the application of drugs some urticaria is a reaction to cold to heat or to sunlight but there remains a big group of chronic cases of weals or of disfiguring recurrent swellings of the face with blubber like lips egg like

orbits and tea plates of oedema on the trunk in which no fault can be found either with the physical health or with the dietary When these patients are intelligent and confidential, both the original commencement and later attacks can be most clearly related to unpleasing domestic situations it needs an intelligent, educated and co operative patient to throw light on nervous causation One can sum up by saying that whereas some patients find relief by physical assault by alcoholism or by extravagance others burst out into small or tremendous weals occurring in crops and lasting for months and such cases are often swiftly ended when the threshold of mental sensitivity is raised by the regular administration of fairly large doses of bromide or of phenobarbitone, even after the routine treatments of colon lavage vaccines Benadryl and autohaemotherapy have proved broken reeds

Rarely, such patients followed up over years, develop exophthalmic goitre but this is in no way usual

To many a patient with alopecia areata and chronic urticaria can be applied the expression *O cor amoris victima*

THE PRURIGO ASTHMA COMPLEX

A quite special group of psychosomatic skin infections is that found in a tense human type, self observant active mentally and physically and self interested Patients in this group develop the flexural plaque of lichen simplex chronicus circumscriptus of Vidal (Fig 193) others repeatedly have irritable red flushes of the flexures of the elbows or knees or burst out suddenly into a confluent scarlet eruption of the face and limbs (Fig 194) which within a few hours is oozing serum in abundance and may usually be mistaken for an acute dermatitis venenata or for an actinic effect, and this can occur without obvious external or internal cause repeatedly over the years

This group is but a variant of the prurigo asthma complex which commences commonly in childhood The patient is highly nervous extremely restless swift in movement facile in emotion and has beady bright eyes watchfully staring from a rather immobile terra cotta coloured and weather sensitive face

I have borrowed the following description by a psychologist (Hellier 1944) concerning a child suffering from asthma

> He has an intelligence much above the average he is irritable and aggressive quick to respond he is over anxious insecure and self confident As a result of his insecurity he often appears at first sight repressed and submissive but even then there is generally an air of subdued tension about him and given the opportunity for a freer and more confident self expression he becomes aggressive and domineering He is in fact the type of child who makes more demand upon his parents particularly his mother than almost any other He is an intelligent individual who twists her round his finger aggressive enough to get his own way and anxious enough to demand her continual attention

It applies exactly to children suffering from prurigo with or without asthma and as a word picture I could not better it



Fig 193—Lichen simplex circumscriptus chronicus of 16 years duration in a patient aged 30 years History of hysterical attacks breakdowns Charcot's anaesthesiae and alopecia areata



Fig 194—Prurigo ferox of 3 years duration in patient aged 68 years confirmed by microscopic examination

A typical case of prurigo-asthma

A boy J S aged 11 years, would be counted by many as being a patient with infantile eczema continued into chronic eczema *Prurigo asthma as a diagnosis is* more informative

I will recite his case at some length because of the light *it throws upon a type of* case that cannot be explained in a simple formula

> To begin with his mother has ichthyosis and his mother s grandfather is said to have had eczema
>
> *His mother noticed that the fronts of his knees began to irritate* first of all when he was 6 months old with little spots which she compared to nettle-rash Later the face and upper limbs were affected and occasionally the thorax Later still the boy developed severe hay fever As soon as this was cured (by the parents insist a series of injections) on the night of the last and final injection this boy developed a severe attack of asthma His next attack of asthma occurred when he was given red capsules of Benadryl
>
> The boy s eruption is said not to be seasonal to be better in the sun and worse in a frost His mother says that when she is cooking if he smells fish an eruption of *papules comes out in his mouth cheese used to bring out the eruption as did* junket yet the boy would avidly eat cow s cream in abundance His mother then remembers that although he could not bear the cooking of fish nor could he eat it he could eat tinned salmon with vinegar with no ill-effect of his skin To touch a mouse made his skin come up in nettle stings He was given a camel hair overcoat and at once itched intensely If his barber used hair oil on him it reddened his forehead The parents go on to say that both Vaseline and Germolene redden his skin and that he cannot stand treatment with grease but contrariwise *to this very* plain statement for years the mother has cleaned him with oil in preference to soap *and water*
>
> The boy is sturdily built highly intelligent and well mannered but he says that if he is crossed the rash will come up and the parents say if he is ruffled against his will up comes the rash Then the story goes back He is intolerant of water in contact with his skin yet recently he was at the seaside and went into the salt water and after a temporary itching and scratching his skin has never been better
>
> His own doctor s observations lead him to conclude that the boy is a mass of contradictions and so *it appears Any friction on the skin tends to bring up* a spasm of irritation yet this so sensitive skin that is said to be worsened by frost is tolerant of the coldest weather and the boy will go out into the open air in the middle of winter without an overcoat or vest It is associated with alopecia areata of about 6 years duration affecting only the eyebrows eyelashes and vibrissae of the nose
>
> Through this fog the guiding light seems to be the idea that this boy s *reactions* are largely now the product of suggestion Confirmation of this last thought is afforded by an *experience in infancy when for experimental purposes* to see if there were any particular foodstuffs to which he was allergic he was kept off first milk *then fish* and then meat for 3 months at a time at the end of which the condition of his skin was unaltered but the parents found him in a state of anorexia refusing all foods and for a long time chocolates were the means by which he was introduced to taking meals of quantity and quality
>
> Another remarkable instance of suggestibility in this particular case was the parents statement that coming up to town to see me *had been buoying* him up for the past week and during this time the greater part of his skin had cleared
>
> *He had* two thickened hands with reddening of the wrists and criss-cross of the skin pattern red and rough backs of the knees a dull-coloured face with bright

watchful eyes and triangular scratch marks on a roughened forehead There was no visceral disease no adenopathy and his urine was clear and his reflexes were natural

That alopecia areata is a nervous malady most will agree That ano exia nervosa is a nervous malady none will contend That suggestibility is a characteristic of hysteria all will agree

This case seems to be one in which the interpretation must be that of hysteria of the skin and that hysteria can occur early in life and be a *comes viae vitaquae* is common psychological teaching

SECONDARY EFFECTS OF DISFIGURING ERUPTIONS

Melancholy seclusion and depression are common secondary effects of disfiguring eruptions that lessen in some patients their self-esteem

Patients with acne vulgaris and hirsuties and even psoriasis may withdraw themselves almost entirely from human intercourse and appear in public only at night or when they are heavily wrapped up in marked contrast to the almost unrestricted social activities of patients with lupus vulgaris or with large rodent ulcers and in quite a separate group of effects are the explosive anger and irritation that patients with lupus erythematosus have against the chronicity and intractability of their butterfly and discoid eruption *Felo de se* is not a rare temptation to women with lupus erythematosus young women with lupus vulgaris marry hopefully and happily

Rea surance and a most careful handling of nervous tension is also necessary in handling young women with hirsuties who will beggar their parents and run a most grievous risk with x ray treatment to remove what they consider a blighting deformity

Psoriasis is usually well tolerated by the patient and his relations but in a few particularly when the psoriasis is thin rather than thick or rupial self-consciousness is vividly active and melancholy a constant symptom and without question many a quiescent case of psoriasis is activated into wide extension by shock

A sad group is that of men and women convinced that they are infested by parasites that no doctor can see They are haunted by the supposed risk of infecting all with whom they come in contact Quite pathetically they sho v shreds of skin wisps of cotton wool and fluff and even caterpillars collected that day in the gard n and present these exhibits as unmistakable proof of their trouble to the doctor These exhibits are hieroglyphs of distress

TREATMENT OF PSYCHOSOMATIC DERMATITIS

The treatment of psychosomatic dermatitis is a very personal matter indeed The patient should be allowed to talk and in self preservation the dermatologist will listen with an even hovering attention Early and easy diagnoses should not be offered nor should cure be *promised* from a single external application

Hospitalization is a great easement from home stresses committee work ambition and argument should be replaced by a mechanical hobby a separate bedroom the avoidance of great changes of temperature at undressing or dressing a lessened attention to sex and the use of sedatives—govern the main lines of treatment For some phenobarbitone ½ grain thrice daily is sufficient and this dose

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of the perineum a post anal cleft may be associated with the post auricular fissures of chronic seborrhoea and a crusted scaly perineum may be associated with psoriasis of the nails or scalp or trunk

When all this has been considered the number of case of *pruritus ani remains* burdensome To be grouped with this are innumerable cases of pruritus vulvae *sometimes* pruritus of the axillae sometimes of the external auditory meatus or *the* sub occipital skin These patients may be thin and restless or obese and apparently placid In a very few it seems to be an aberration of sexual desire In most the patient gives a history of severe business or family stress and the complaint may be interpreted as an escape mechanism of anxiety neuro is

Treatment

Sequeira (1947) early recognized that in neurotic cases the patience of the medical attendant is sorely tried and he reflected *that the large number of remedies suggest* the intractable nature of the affection

Some of the e patients can be cured by heavy sedation some receive immediate relief by the application of coal tar many improve on a holiday *and relapse* when they return to their homes which gives material for further inquiry into the case

What is striking is that the greatest number receive immediate benefit from local doses of x rays or roentgen rays but it has been *noticed* that some of these *patients do equally well if there be a sheet of* lead between the treated perineum and the x ray tube in other words the impressive x ray treatment is satisfying to a patient s ego something more is being done than the application of an ointment and this attention to his trouble seems sufficient to set the *censor into motion* and the conscious mind reigns with *undisturbed serenity*

It is common for men to scratch when thinking over a knotty problem it is less common but equally noticeable that itching may be a *manifestation* of anxiety disappearing when mental tension has slackened That we blush with shame whiten *with shock* and perspire with fear are common emotions

Purely mental factors *may* as far as we can tell alone operate in the production of dermatoses *Itching eruptions of* diverse characters may follow such varied events as a near *bombing incident* law suits and chemical hurts to the skin and when psychological factors undoubtedly *predominate* a psychological outlook upon treatment or the co operation of a psychiatrist is necessary in the sound practice of dermatology

To break a vicious circle of itching and *scratching with* more damage to the skin more scratching more dermatitis and *more* d pression continuous narcosis has been found very effective *treatment* It has long been my practice to use paraldehyde in half ounce doses sometimes twice a day and MacCormac (1946) and others have described such treatment with narcosis of 5–14 days duration using Somnifain night and *morning aiming at 20 hours of sleep out of* the 24 for periods of not longer than a fortnight

Scabies

An itching skin naturally leads to some consideration of *the problem* of scabies Hodgson (1941) gave much consideration to the *intelligence of patients attending*

and more is well tolerated at the age of 4 years Many patients are free from *irritation on Sodium Amytal 3 grains every night* Some severe cases need 35 drops of tincture of opium in a mixture thrice daily, and it is remarkable that patients will take this for 3 and 4 weeks *without a suggestion of hypnosis or addiction and* with the greatest relief of their signs and symptoms Small doses of x rays such as one third of a Sabouraud Pastille dose or 150 r units repeated at an interval of 3 weeks and not more than 3 times in all put an end to much functional irritation and for cases such as prurigo ferox or when itching may have continued even for 10 or more years a twilight sleep maintained for 10 days allowing the patient to come back into consciousness once a day for washing and feeding will effect a cure

Children s lesions must be clearly and firmly dressed and even their limbs restrained so that continual traumatic dermatitis is abolished

The professional and confessional technique of the psychiatrist will be of the greatest help to a dermatologist if he himself is a bluff and hearty man with an extravert s outlook on human life and its problems and the use of T A B vaccine *for shock therapy in these cases is best explained by the old adage that by* Beelzebub you cast out Satan

PRURITUS

Itching at the anus is the commonest form of localized pruritus The parts affected are a circumscribed area about an inch wide round the anal orifice and less *frequently the anal canal*

Signs and symptoms

Itching varies in intensity it is often described as ferocious the desire to scratch is unrestrainable it may be intermittent be noticeable only at the time of going to rest in bed or may be present during the whole of the waking hours

Most commonly the perianal skin shows no physical signs or very few indeed There may be triangular scratched tears horizontal and linear abrasions, a local dry thickening of the skin or a moist excoriated scarlet perianal area with fissures This exudative erythema may extend forwards into the perineum and backwards into the gluteal cleft An occipital lichen may coexist and alopecia areata may be *remembered*

Local causes

In dermatological text books stress is laid upon the necessity to exclude the presence of threadworms or their ova haemorrhoids anal fissures polypi chronic proctitis with a purulent discharge chronic constipation *with hard* scybalous masses pelvic tumours and leucorrhoea in the female In addition it is customary for physicians to look for hepatic cirrhosis diabetes *mellitus* chronic renal disease alcoholism and the excessive use of coffee and tobacco Surgeons in addition advise *the removal of piles small and large* and of perianal tags of skin

Nevertheless, most cases coming to the dermatologist show no local cause Acute infection *of the perianal skin* may itch intensely This follows an attack of diarrhoea Seborrhoea elsewhere may be associated with acute infective dermatitis

martyrs to headaches frontal or vaguely located A few admit that voices talk to them in the night many have a choking in the throat and add that their eyeballs burn Unpleasant thumping of the heart is a common symptom In addition the stomach sinks or goes round and round the limbs shake and tremble they suffer from black outs and faints some have had attacks of mucous colitis some collapse or faint and a few have been in and out of mental hospitals

Many attending today with pompholyx of the hands or feet have been dismissed from the Army on the advice of the psychiatrist and depression sometimes described as black depression is claimed by many of them During their military service they may have had a gastric stomach and the very young patients may still be bed wetters and nail biters

PSORIASIS

Psoriasis is accounted a classical skin malady a natural disease of rather obscure origin perhaps only an inborn type of reaction that can be produced by several and varied exciting causes

Every dermatologist will experience cases in which guttate or nummular psoriasis has become universalized by a shock for example there was a practising dentist in whom generalization occurred after injecting glacial acetic acid by mistake for Novocain and exfoliative dermatitis developed in a case of nummular psoriasis in an old lady who set her house on fire by nocturnal smoking in bed

Ordinarily psoriasis does not itch but it is common for nervous patients to have a very thin type of psoriasis which itches exasperatingly

TRICHOTILLOMANIA

Occasionally young boys from public institutions are brought to the dermatologist with a suggested diagnosis of ringworm and the explanation of their patches of baldness lies in their admission that they have melted sealing wax stuck it on their scalps and pulled it off to puzzle the doctor This may be but a nuisance but it leads on to a consideration of trichotillomania a peculiar neurosis with no pathological basis in which the extraction of hair becomes a dominant obsession

Hair may be plucked from eyebrows from the lids or scalp or beard Excoriations may be noticed and the artificial alopecia may have a bizarre design

Patients say that they feel a compulsion to pluck the hairs because of an indescribable feeling that certain particular hairs must come out for local or general relief Other patients sit up and pluck their hairs in the night only when suffering from the distress of an asthmatic attack

INCIDENCE OF SKIN DISEASES

In 705 new cases of skin diseases in patients who attended the London Hospital in September 1948 there were 21 cases of alopecia areata angioneurotic oedema 2 cheiropompholyx 51 stocking erythema 4 hyperidrosis 4 lichen planus 3 lichen simplex 5 nevrodermite 9 prurigo of all varieties 9 pruritus ani et vulvae 8 and urticaria 15 so it will be seen that the problems of the psyche loom heavily in skin practice today

a military dermatological clinic with the itch and demonstrated that a high proportion of men with very inferior ' intelligence was found in the infestation and venereal groups These groups showed a higher proportion of subnormal intelligence than did the controls Among infested patients he found that that proportion of subnormal intelligence amounted to 56 per cent

One hundred unselected scabies patients and a control group of 500 consecutive recruits were submitted to an intelligence test for this purpose

CHEIROPOMPHOLYX

Cheiropompholyx (hand bubbles—not excluding the feet also) calls for special consideration This is a conventional term to be used conventionally much as scarlet fever holds a deeper and fuller meaning than the words red heat By cheiropompholyx is similarly meant a chronic and recurrent malady

In addition to the spontaneous appearance of large and small blisters on hands and feet containing a glairy or water fluid there is a sweating condition of the hands so marked that the previous generation of dermatologists named this dishydrosis , believing that the vesicles were retentions of sweat These patients complain of tremulous hands electric knee jerks sweating armpits quick speech mobile or twitching facies, and often say that attacks, to their knowledge quite definitely are associated with periods and times of stress and strain

Wittkower (1948) says that more often than can be due to chance pompholyx occurs in individuals who are emotionally maladjusted

Quite properly one excludes from the term cheiropompholyx hand and foot blisters of other and definable origins A drug eruption, a toxic bullous eruption or a tinea a hurt by heat plants or hazardous chemicals, can all produce a bullous or vesicular efflorescence but these conditions have their own specific nomenclatures and the conventional group named cheiropompholyx is extrinsic to this I have seen a short series of cases of cheiropompholyx in soldiers in a hospital outside Beirut all following and none antedating fractures of the skull in motor cycle accidents These may have a past history of alopecia areata their blisters may disappear and they may develop pruritus ani

At out patient departments where the handling of these patients must be swift and the medical approach quick explosive dissent on the part of these patients may be expected at any time and when every effort has been made to find an occupational extrinsic cause for eruptions on the hand and this effort has failed these patients must then be labelled cheiropompholyx without qualification They bulk heavily in the figures 28 such patients were seen at the London Hospital skin out patient department in January 1948 39 in August and 42 in October of the same year

Signs and symptoms

If time can be given and the patients are allowed to talk it will be found that the hands are not the only organs that trouble their consciousness Working from above down they will if listened to invitingly and patiently say that the head opens and shuts or that there is an iron band pressing round it and that they are

martyrs to headaches frontal or vaguely located A few admit that voices talk to them in the night many have a choking in the throat and add that their eyeballs burn Unpleasant thumping of the heart is a common symptom In addition the stomach sinks or goes round and round the limbs hake and tremble they suffer from black outs and faints some have had attacks of mucous colitis some collapse or faint and a few have been in and out of mental hospitals

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In the Army the practice of rehabilitation of patients with skin diseases was put into the hands of Dr Hellier and I quote this paragraph from him because it is a form of attack which will be developed I hope under dermatological control (Hellier, 1944)

> An auxiliary hospital was set aside for chronic skin cases which have failed to stand up to army life The object of the scheme is twofold first the men have a set routine of work at least five hours a day doing domestic work workshop jobs gardening harvesting etc This is to keep their minds occupied so that they do not sit and brood all day over their skins Secondly they do fairly strenuous work including P T which keeps them physically fit and gives them confidence that their skin will stand up to exercise even though it may make them sweat and thus the man returns to his unit unafraid of the consequence and shock of transition from the shielded atmosphere of the hospital to active duties is graduated I err on the side of risk rather than caution and let eczema patients bathe and seborrhoeic patients sweat for I would rather have a man break down in hospital if he is going to do so than when he has got back to his unit The experiment is only in its infancy but so far the results seem to justify it

LINKAGE BETWEEN INTELLIGENCE AND PERSONALITY AND SKIN LESIONS

In the present state of our knowledge distinct types of human personality and particular skin diseases cannot be closely and solidly linked together It is reasonable to hold that dull mentalities tolerate and acquire scabies more so than the intelligent But the dermatologist will group his skin lesions and at the same time group his skin patients as far as he can into those who are obsessional and those who are hysterical those who are grievously anxious those who are narcissistic and those who are certainly of low intelligence

Attempts have been made to draw up a simple scheme of linkage so that the human types as recognized by psychologists might be found allied to definite cutaneous disorders

MacKenna (1944) set out the problem in this way The psychologist says I find that this patient is a tense restless conscientious man preoccupied with matters of cleanliness order and routine and he asked whether it is possible that the dermatologist can assert with reasonable accuracy, that his skin eruption, if he develops one will be likely to be definitely W X Y and perhaps Z after considering this he wisely comments that to make such an attempt at the present time is to allow vaunting ambition to overleap itself

Roughly the statement might be ventured that the relations of intelligence and personality to types of skin lesions would run as follows With low intelligence would be associated infestations and skin sepsis with hysteria self inflicted lesions with narcissistic features an exudative dermatosis in gross states of anxiety might be found excoriated acne hyperidrosis pompholyx and rosacea and patients with obsessional trends might show lichenification prurigo simplex pruritus ani and pruritus vulvae

Appearance and the first stories can be most deceptive A leading case is a man who had three successive examinations in a matter of workman s compensation was unmannerly aggressive and most suspicious and I felt that revenge with or

without cupidity were dominating factors in producing and continuing this eruption A day was fixed for a court hearing and an hour previously I examined him in his solicitor s office his bearing was calm his manner most pleasing his reflexes natural and his skin free from rash Speaking afterwards to his legal adviser I asked if the man had found peace and content in a religious conversion and the lawyer replied that he had at last got rid of his wife

STIGMATIZATION

Today any consideration of psychosomatic dermatitis would be wilfully incomplete without reference to stigmatization a technical term applied to men or women mostly mystics who with intense suffering bear on their hands and feet on the forehead and on the side the marks of Christ s Passion up to now over 300 such cases have been recorded

The recurrent pains and wounding observed have been recorded with increasing strictness as the centuries have passed No such phenomena are known to have been recorded prior to the thirteenth century St Francis of Assisi 1186–1226 St Catherine of Siena 1347 Anna Katherina Emmerich 1774 and Louise Lateau 1860 were outstanding and well known cases and today the facts of the story of Teresa Neumann of Konnersreuth in Bavaria are known by experience to hundreds of troops of all nations and to physicians of many countries

Artefact has been excluded by every possible method and freely conceding the absence of guile and falsehood the recurrent wounds and associated phenomena have become a subject of increasing study for medical research and philosophic consideration

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CHAPTER 29

LICHEN PLANUS AND THE LICHENOID ERUPTIONS

JOHN FRANKLIN

LICHEN PLANUS

LICHEN PLANUS is a disease of obscure origin characterized by the appearance of numerous polygonal papules of a peculiar lilac or violaceous hue

Aetiology

Lichen planus may make its appearance at any age although it rarely occurs before the early twenties It affects both sexes equally The cause is unknown but there is a good deal of evidence to show that it may be the direct response of emotional disturbances and shocks of various kinds It may also follow other skin disorders very rarely typical psoriasis has been known to change *imperceptibly into lichen planus*

Clinical picture

The individual lesion in lichen planus is a brightly coloured shiny papule (Fig 195) On close inspection it will be seen to be square angular or many sided It is *seldom round and this is one of the most striking features of the illness* At onset the colour is a vivid lilac quite unlike the colour seen in any other skin diseases The papule is flat topped and with a magnifying glass fine linear striations may be seen running over it These are known as Wickham s striae There is also a tendency for groups of papules to coalesce Distribution is somewhat characteristic and it is *the flexor surfaces of the forearms (Fig 196) and the anterior surfaces* of the shins which are most often involved The rash however may appear on any part of the body The rash may be sparse or profuse and occasionally large individual lesions occur The irritation especially in the initial stages is intense and *it is curious that* although this itching conduces to a great deal of scratching actual scratch marks are practically never seen There is however some evidence that the disease may spread along the lines of scratching The disease may take various courses the most usual being for the individual papules to become darker in colour until a sepia shade *is reached when they fade leaving a brownish staining* which in time disappears The whole process may take six months or more In other instances there are repeated fresh showers of lesions so that while the papules may be darkening in colour on one part of the body fresh brightly coloured ones are erupting elsewhere On certain parts of the body the eruption may take different *forms thus* on the palms and soles there is a tendency for the papules to become somewhat atrophic and depressed below the normal level of the skin Again on the glans penis there is a tendency for the papules to group together and form little rings and such an appearance *is frequently very disquieting to the patient* Atrophic



Fig 195 —Papules of lichen planus



Fig 196 —Lichen planus of the forearms

lesions also occur on the scalp where there may be a singular absence of the characteristic colour A useful diagnostic sign is the appearance of china white striations on the buccal mucosa (Fig 197) These however must be distinguished from somewhat similar lesions produced by trauma from ill fitting dentures As a rule there



FIG 197—Lichen planus of the buccal mucosa



FIG 198—Confluent lichen planus

is very little scaliness associated with this disorder but in very severe cases when the confluence of papules (Fig 198) is sufficient to produce sheet like lesions there is sometimes a great deal of hyperkeratosis Another feature of importance

is the developm nt of lichen planus on the vulva where it may be and frequently is mistaken for leucoplakia Other odd types are lichen planus verrucosus and lichen hypertrophicus (Fig 199) in which in various parts the individual lesions may stand up ¼ inch from the surface of the skin Lichen corneus obtusus in which there are round smooth rather violet-coloured swellings mostly on the legs and

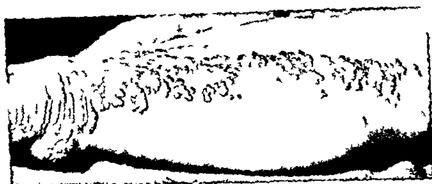


FIG 199 —Hypertrophic lichen planus

round the knees may be a form of lichen planus but is more probably a manifestation of prurigo When the ends of the fingers are affected trophic changes may take place in the nail plates

Histopathology

There is regular thickening of the horny layer but no parakeratosis The granular layer is thickened in places sometimes to as much as six or seven layers of cells The rete shows marked acanthosis with flattening of the pegs The papillary layer of the dermis is infiltrated with dense masses of lymphocytes which in places penetrate the basal layer The tips of the papillae are sometimes oedematous and rounded

Course

As has been said in a straightforward case the disease will run its course in 4–6 months but sometimes it may last a very long time even several years with periods of exacerbation and fresh attacks or outbreaks In time however it always subsides and leaves no after effects

Diagnosis

Diagnosis should be simple The shape of the individual lesions the character the colour and the intense irritation together with the white striation in the mouth when present are diagnostic In fact lichen planus is totally unlike any other skin disease Lichenification in no way *really* resembles this illness It is sheet like and of an entirely different colour There should be no confusion with the rash of secondary syphilis for that malady is always free from irritation besides being pleomorphous in character and of a coppery hue Further in secondary syphilis there are

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may be just a plain scaling of the skin especially on the face Later on the character istic papules appear and then the typical papular squamous condition occurs The characteristic papule is small pointed hard and dry and varies in colour from flesh-coloured pink through pinky yellow to red Each lesion is situated at a hair follicle and is penetrated by a hair Close to the hair is the horny sheath which may penetrate the hair follicle for some distance In some areas when a lens is used fine lanugo hairs may be observed to be piercing individual papules As a rule the dis order is more marked over the extremities and on the neck than on other areas of the body but the whole surface of the skin may in time become involved The dis ease is very characteristic when it affects the backs of the hands and the proximal



FIG 200 —Lichen axillaris

phalanges Here the horny scale may be black in colour The course of the disease is chronic with remissions and exacerbations but even when the disorder disappears for a time it ultimately returns Irritation is not a constant factor but in some instances may be quite severe

Histopathology

There is marked hyperkeratosis especially at the mouths of the hair follicles together with parakeratosis There is usually acanthosis of the rete and a leucocytic infiltration of the dermis

always present other signs of that disease In the lichenoid tuberculides (a thoroughly bad term), the individual lesions are rounded or pointed and free from itching

Treatment

In severe cases rest in bed is desirable and when there has been prolonged severe irritation there is no doubt that sedation, by means of Sodium Amytal 3 grains 4 hourly will produce improvement almost at once This treatment may be safely continued for 7–10 days It is advisable however that this form of treatment should be employed only when skilled nursing is available In cases in which *there is an obvious nervous factor, this will have to be dealt with but ambulant* patients may be treated with barbiturates such as phenobarbitone ½ grain given thrice daily There is some evidence that mercury administered orally is useful and this drug may be given in a mixture containing Liquor Hydrargyri Perchloridi (*B P C*) 2 millilitres per dose 3 times a day There is no evidence to show that arsenic given by mouth—a method which has been much used in the past—is of the slightest value Local treatment other than the application of anti pruritic lotions is valueless *Chronic patches may sometimes respond to small doses of x rays* In severe cases with very great irritation withdrawal of about 10 millilitres of spinal fluid by lumbar puncture has sometimes produced a remarkable remission of symptoms but it is open to question whether the response here is not psychological It is possible that the disease in its ordinary forms is not much influenced by treatment, but that it will run its course in spite of what may be done

LICHEN NITIDUS

Lichen nitidus is characterized by the presence of areas of minute shiny, flat *topped flesh coloured pink or reddish papules the majority* of which are no larger than a pin s head As a rule they affect the genitals or the flexor surfaces of the joints but may appear anywhere The individual lesions always remain discrete Some observers believe this disease to be a variety of lichen planus but on the whole there is no very great evidence to support this view It has been ascribed to tuber culosis and has often been classified with the tuberculides but again *there appears* to be no very solid basis for this view Irritation is not a constant factor Indeed *more often than not it is absent and once the lesions have* developed they tend to remain permanently Occasionally the disorder disappears spontaneously No treatment appears to be of any value

PITYRIASIS RUBRA PILARIS

Pityriasis rubra pilaris (lichen ruber) is a chronic exfoliating disorder of the skin in which the chief lesion is a small pointed papule at the mouth of a hair follicle *Sometimes the papule is topped by a horny scale* When the lesions run together red scaly areas occur which may spread over the whole body

Aetiology

The cause is quite unknown It begins frequently in the second decade but has *been seen* at all age periods and affects males and females almost equally

Clinical picture

Pityriasis rubra *pilaris begins somewhat insidiously* Indeed at first its true character may not be apparent It may simulate seborrhoeic dermatitis or there

CHAPTER 30

DISEASES DUE TO CIRCULATORY DISORDERS

JOHN H KELLY

INTRODUCTION

THE circulatory disorders which produce cutaneous lesions occur almost exclusively in the peripheral vascular mechanism Arterial insufficiency and venous insufficiency in their chronic forms are the vascular states most commonly responsible for lesions of the skin the former producing ischaemia with ulceration and gangrene as the ultimate results the latter causing stasis dermatitis and ulceration Alterations occur in the rate of blood flow through the skin with consequent changes in colour and nutrition and with disturbances affecting the finer vessels Spasm of the arterioles may lead to a complete stoppage of blood flow in the capillary bed and may give rise to pallor or blanching as met with in Raynaud s phenomenon In this case there is possibly a constriction of capillaries and venules as well The degree of closure of the capillary lumen determines the colour of the skin while the coldness is proportional to the arteriolar constriction As the subpapillary venous plexus is also a factor in skin colour complete pallor entails absence of blood flow there

On the other hand this arteriolar spasm may lead to only a relative degree of obstruction to blood flow and when there is associated dilatation of the capillaries through which the blood flow is extremely retarded the coldness and blueness of acrocyanosis are produced When the diminished rate of blood flow is on the venous side and is caused by chronic venous insufficiency the rise of venous pressure is responsible for stasis in the capillary network with alteration in the blood chemistry including a rise in the content of protein and carbon dioxide and a fall in oxygen content When stasis is prolonged increased capillary permeability ensues and there is oedema The nutrition of the skin suffers from anoxia and oedema and this state favours the development and maintenance of dermatitis as is seen in the varicose state associated with chronic venous insufficiency When skin in this condition is traumatized by rubbing or scratching minute purpuric haemorrhages occur and the brown permanent pigmentation of haemosiderin appears

In 1912 Lombard first observed the capillaries of the nail fold with a microscope Since that time capillary microscopy has led to an increasing collection of data on the behaviour of capillaries under various conditions The length shape and calibre of the capillary loops and the number per field may be observed together with the rate of blood flow through them Under experimental conditions the response to drugs may be studied and the effects of temperature changes in various diseases may be observed The capillary picture changes considerably with age In the first week of life the arterial and venous limbs of the loops are clearly defined

Diagnosis

Once the disease has fully developed, diagnosis should be simple the characteristic papule being present with its apex penetrated by a hair

Treatment

Treatment is unsatisfactory, but good results have been claimed from the use of vitamin A and nicotinic acid Locally an ointment containing 4 or 5 per cent of salicylic acid will help to keep down the hyperkeratosis and render the skin soft When there is much involvement of the scalp frequent shampooing is indicated *As has been said the prognosis is unfavourable*

LICHEN AXILLARIS

Lichen axillaris (Fox Fordyce disease) (Fig 200) is a rare malady in which minute flesh coloured circular dome shaped itchy papules affect the hairy parts of the axillae and pubes The papules may be set closely together, but they do not coalesce

There is inflammation surrounding the apocrine glands which seems to point to the fact that the disease may be due to their dysfunction As a rule there is no irritation and temporary epilation by the appropriate dose of x rays is often curative

consist of arteriolar spasm with capillary dilatation The loss of capillary tone in acrocyanosis may b due in whole or in part to chronic oxygen lack and the effect of increased carbon dioxide tension on the capillary walls In acrocyanosis there is no arterial anoxaemia to cause relaxation of arterioles the oxygen lack being distal to the arterioles and more particularly in the venous limb of the capillary loop in which dilatation is most pronounced Lambie and Morson finally conclude that acrocyanosis in their patient was probably due to a developmental error involving the cerebral mechanisms controlling vasomotor tone and vegetative functions

Differential diagnosis

The colour changes in acrocyanosis are symmetrical painless and persistent while intermittent colour changes with blanching are characteristic of Raynaud s disease In erythromelalgia the reddened skin is warm and there are burning sensations which may be very severe but in acrocyanosis the skin is cold and there is little if any discomfort Cyanosis from pulmonary or cardiac conditions or from other causes must be differentiated In congenital heart disease clubbing of the fingers may occur whereas it is unknown in acrocyanosis Lambie and Morson (1937) mention pink disease in the differential diagnosis Apart however from the difference in colour in the two conditions the child with pink disease exhibits marked photophobia and nervous irritability

The condition of the peripheral arteries should be examined to detect any occlusive disease in which transient or intermittent attacks of cyanosis of the extremities may occur

Treatment

Protection from cold is essential and patients with acrocyanosis will be more comfortable in warmer climates It is claimed that sympathectomy will give excellent results in severe cases

LIVEDO RETICULARIS

Livedo reticularis is characterized by readily discernible bluish red patchy discoloration of the extremities the discoloration forming a well defined network The retiform pattern may extend up the thighs and appear across the abdomen and lower part of the back and in addition the arms and forearms may be affected (Fig 201) The skin is cold to the touch discoloration increases in cold temperatures and the pattern becomes more distinct *Livedo reticularis* has received comparatively little attention through the years and most writers refer to the description given by Williams and Goodman (1925)

Aetiology and pathology

The aetiology is quite unknown but the condition is said to occur in those persons of a nervous disposition On the other hand the condition is occasionally seen in small infants and this suggests that there is an underlying peripheral vascular disturbance it is suggested also that this disturbance has the same nature as that seen in acrocyanosis in which there is a spastic condition of the arterioles with dilatation of the capillaries and venules Williams and Goodman (1925) h ld the

By the sixth month the adult form has been developed In the absence of disease no further changes take place until the later decades *Brown and Roth (1927)* found that the arterial limbs of the capillary loops narrowed progressively with increasing age The rate of capillary flow diminished and abnormalities appeared in the type of blood flow which tended to become slow and jerky sometimes with a tendency towards stasis or segmentation of the capillary stream with spaces of clear plasma in the blood column

Various peripheral vascular diseases may show somewhat characteristic capillary pictures The capillary changes in different phases of Raynaud s phenomenon can be studied Following sympathectomy, there is an increase in the number of capillaries per unit field while their length and calibre are decreased and the flow is continuous and more rapid

ACROCYANOSIS

Acrocyanosis was first described by Crocq as a persistent blueness of the hands and feet the discoloration fading proximally at the wrist and upper parts of the foot The essential features are blueness and coldness of the hands and these conditions may be found in the feet but usually to a lesser extent The blueness is persistent, but there will be some colour change with variations in temperature so that under warm conditions there may be an admixture of redness Blanching which is a prominent feature of Raynaud s disease never occurs in acrocyanosis Scleroderma does not develop and the phenomena of occlusive arterial disease namely ulceration and gangrene are not present at any phase The lesion does not give rise to disability though there may be some swelling in very cold weather

Aetiology

Acrocyanosis is more common in women Endocrine disturbances may coexist and there may be a family history of vasomotor disorders Stern (1937) in a review of the aetiology and pathology of acrocyanosis points out that this disease is common among the insane He states that oedema is sometimes a feature but this may be due to the fact that the insane are apt to remain inactive for long periods with the hands in a dependent position

Pathology

Allen Barker and Hines (1948) state that very little is known of the pathology of acrocyanosis The work of Lewis and Landis (1940) showed that as the blue colour diminished when the hand is raised above the heart level venous obstruction is not present They also concluded that the causative factor was spasm amounting to obstruction of the small arterioles with dilatation of the capillaries and the venules, and resultant slowing of the blood flow through the skin Other workers attribute the manifestations to the influence of the sympathetic nervous system on the peripheral vessels Stern (1937) has shown that in addition to spasm of the arterioles there is some hypertrophy of the middle coat which further slows the rate of blood flow

Lambie and Morson (1937) review the problems of acrocyanosis at considerable length The location of the vascular changes is determined by a process of exclusion and the views of Lewis and Landis are accepted namely that the vascular changes

confused with livedo reticularis which shows a definite and persistent network of discoloration with the distribution already described

The term livedo racemosa was introduced by Ehrmann in 1907 to designate certain rare cases of telangiectasia occurring in the course of syphilis The lesions are described by Andrews (1938) as coarse irregular networks of purplish bands about the knees or on the arms Clinically the eruption suggests an exaggerated form of cutis marmorata or erythema *ab igne* Andrews states that some of these cases have a syphilitic basis but the causation of others is obscure Tobacco alcohol arteriosclerosis and tuberculosis are quoted as possible responsible factors The blood vessels show the changes of endarteritis and mesarteritis Livedo racemosa appears to be an ill defined entity from the clinical standpoint It is therefore essential that the Wassermann test should be performed in all cases of extensive telangiectasia and prior to the making of an absolute diagnosis of livedo reticularis Adamson (1916) described a series of patients with livedo reticularis and erythema induratum Allen Barker and Hines (1948) state that when the disease process advances with arterial changes areas of ulceration may occur on the legs Gangrene of the toes ensues when occlusion of the digital arteries develops

Treatment

In the vast majority of cases the patient seeks treatment for purely cosmetic reasons the disfigurement being very disturbing to women in particular The protection of the limbs from cold and from sudden changes of temperature should be the main principle of the treatment advised Change to a warmer climate may slow the progress of the condition Allen Barker and Hines (1948) found the results of lumbar sympathectic ganglionectomy to be variable relief of aching and coldness being the rule The colour of the livedo was little affected in some cases but improved to pinkness in others Healing occurred in advanced complicated cases with ulceration and gangrene but in some instances this was not permanent

ERYTHROMELALGIA

The cumbersome term erythromelalgia was devised by Weir Mitchell in 1878 for a condition of burning and redness of the extremities Smith and Allen suggested erythermalgia as a more suitable name because it indicates the essential feature of this particular form of painful rubor namely an increase in the skin temperature of the affected parts (Allen Barker and Hines 1948) Little attention has been given to this rare disease It may occur in adults of either sex but it is not unknown in children and infants

Primary and secondary types of this disease are described The primary or idiopathic type occurs in otherwise healthy subjects without circulatory or nervous diseases Secondary erythromelalgia is a manifestation of vascular disturbance hypertension polycythaemia gout organic nervous disease and various forms of metallic poisoning Pathological changes have not been found in idiopathic erythromelalgia. The condition is usually bilateral but may be unilateral and is generally regarded as being functional in origin Mumford (1929) recorded a case of hysterical monolateral erythromelalgia which was successfully treated by suggestion Burning and redness commence after warming of the skin and Lewis (1923) has described a critical point of temperature above which symptoms will be

view that the pattern was produced by the terminal arborizations of the corresponding spastic arterioles of the cutis They postulated obstruction in the peripheral portions of the affected arterioles with consequent slowing of the rate of blood flow in the capillaries as in acrocyanosis

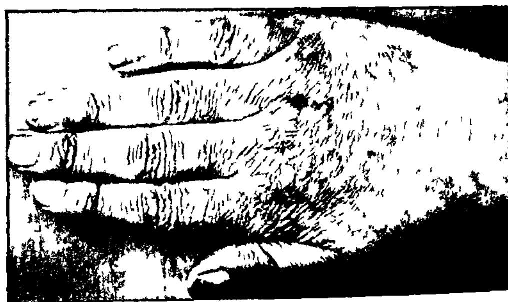


Fig 201 —Livedo reticularis

Symptoms

Noteworthy symptoms are absent in the majority of uncomplicated cases of livedo reticularis although some patients complain of varying degrees of discomfort coldness and numbness in the lower extremities Such symptoms may be indicative of advancing arterial disease or they may be partly psychological in origin, the source of mental distress being the unsightly discoloration

Differential diagnosis

The bluish red blotchy pattern is persistent becoming more obvious under cold conditions and rather more red with warmth but never disappearing Unless there is accompanying peripheral vascular disease further changes will not occur As has already been mentioned the lesion may be present in infancy and is sometimes mistaken for capillary haemangioma though the symmetry and distribution should indicate that this is incorrect

Cutis marmorata is a temporary bluish mottling of the skin which occurs in many people under cold conditions but it disappears rapidly when the skin is warmed It should not be confused at all with livedo reticularis in which the pattern is persistent

Generalized telangiectasia may occur in the course of or following on acute infective diseases and it may occur in association with pregnancy Osler s familial haemorrhagic telangiectasia affects the mucous membranes as well as the skin and epistaxis is an outstanding feature These telangiectatic states should not be

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individuals may on occasion lead to overstraining of the venous system even to the extent of valvular damage

Secondary varicose veins are caused by venous obstruction resulting from the pressure of pelvic tumours or the pregnant uterus The result of pressure on the iliac vein or on the inferior vena cava is increased pressure in the saphenous system When there is obstruction of the femoral vein or of the ilio femoral vein the saphenous system provides collateral venous return

Th main disadvantages of the varicose state are marked increase of venous pressure when the patient is in the standing position There is also slowing of the rate of blood flow which may even be reversed and this reversal may be palpable to the examining finger with any rise in intra abdominal pressure as with coughing or straining This retardation or reversal in the blood flow may be demonstrated by the injection of radio opaque substances

Various tests have been devised to determine the competency of the valves in the saphenous veins and the perforating veins and the presence or absence of blockage of the perforating veins and the deep veins

Trendelenburg test

The Trendelenburg test is generally approved for estimating competency of the saphenous valves With the patient in the recumbent posture the leg is elevated and the superficial veins are thus emptied and collapsed A tourniquet is applied to the upper part of the thigh with sufficient pressure to compress the saphenous vein The patient then stands and the tourniquet is quickly released If there is rapid filling from above on release of the tourniquet incompetency of the saphenous valves is indicated If there is rapid filling from below there may be an arterio-venous communication thrombosis of the femoral vein or incompetence of per forating vessels When filling takes place slowly from below in a matter of 30 seconds the position is regarded as normal When filling from below is very retarded arterial insufficiency is indicated

The Perthes test

The Perthes test will indicate the condition of the deep veins and of the com municating veins A tourniquet is applied to the thigh sufficiently tightly to compress the saphenous vein and the patient then walks about quickly while the condition of the superficial veins is observed If the veins disappear during walking the com municating veins and d ep veins are functioning and presumably both have competent valves If the veins do not disappear and there is no pain the valves in both the saphenous and communicating veins are incompetent If the veins become distended and there is pain while walking obstruction of the deep veins is present and the saphenous system is providing collateral return

Other methods have been devised for testing the competency of valves in the perforating veins The two tourniquet test is valuable in this respect

Varicose dermatitis

Extensive varicose veins may exist without symptoms but whenever chronic venous insufficiency is present with a retarded blood flow and congestion of the

provoked and below which they may disappear This critical point will differ with individual subjects

Diagnosis

Painful red extremities will occur in the course of peripheral occlusive arterial disease such as thrombo angiitis obliterans but the areas will be cold unlike erythromelalgia in which the skin temperature is raised The diagnosis of erythromelalgia can be made when there is redness and burning of the extremities and raised skin temperature without any evidence of organic disease

Treatment

Attacks of burning and redness occur when the skin is warmed to the critical temperature or above and the distress caused by pain and burning may be well nigh intolerable Allen Barker and Hines (1948) claim that the symptoms may be relieved by small doses of acetylsalicylic acid and this fact may be a useful diagnostic point Sufferers must avoid heating of the extremities as far as possible Relief is obtained by cold applications and by elevation of the affected parts In all idiopathic cases, it would appear desirable to seek the co operation of a psychiatrist, especially in those patients with prolonged and intractable episodes The underlying emotional disturbance must be discovered and eliminated if possible Alternatively, patients should be assisted to achieve a satisfactory adjustment to the difficulty Extreme surgical measures such as crushing or section of peripheral nerves are sometimes recommended such undesirable procedures are a confession of failure and should not be countenanced

VARICOSE VEINS OF THE LOWER EXTREMITIES

The term varicose is usually applied to the veins of the lower extremities when they are enlarged tortuous and elongated Frequently the name is given to any visible enlarged veins and many authorities accept this definition but strictly speaking the term should be confined to dilated veins with incompetent valves Dodd (1947) defines a varicose vein as one in which elasticity is lost and as a result has become dilated elongated tortuous pouched and friable He takes the view that failure of the valve at the sapheno femoral junction is of the first importance in the breakdown of the efficiency of the saphenous system as this valve defect permits backflow Incompetence of the valves of the communicating veins also promotes backflow These communicating vessels are most regularly present in the lower third of the thigh and leg The inherent weakness may be in the vein wall and with dilatation the delicate valve flaps become inefficient Incompetence of the valve would assist further dilatation of the vein wall below

Causation

Varicose veins are usually classified into two types primary and secondary

Primary varicose veins develop as a result of congenital weakness of the vein wall which may be hereditary as there is no doubt of the familial incidence of varicose veins It may be on the other hand that there is a congenital absence of valves in the veins and with such a vulnerable mechanical state prolonged orthostatism with or without physical effort will result in stretching of the vein wall and varicosity will develop It is believed that severe physical effort in young muscular

widespread dermatitis though it is more particularly associated with thrombo phlebitis and sometimes with infection and cellulitis Pain is a feature of varicosity of the lesser saphenous system

Differential diagnosis

The differential diagnosis will include discoid or nummular eczema and that form of neurodermatitis known as red leg eczema

Discoid (nummular) ec ema —This lesion may appear on the legs more or less symmetrically as rounded papulovesicular weeping or crusted patches and similar lesions will be seen on the trunk or upper limbs

Red leg ec_ema — Red leg eczema (Fig 203) is the particular condition with which varicose dermatitis is most commonly confused especially in the average outpatient clinic It usually occurs in elderly patients of both sexes though it was



FIG 203 — Red leg eczema

not infrequent in the dermatological wards of Army hospitals during World War II The lesion usually commences as an area of irritable erythema on the inner side of one leg in its *lower third* though it may appear elsewhere The area is rubbed with the fingers or with the opposite heel this rubbing is usually done at night consciously or unconsciously It is necessary therefore to protect the area with a non flexible shield such as a suitable piece of metal or strong cardboard bent around the limb and bandaged *on to it* In the absence of effective protection and co operation the redness gradually extends until the limb becomes a red cylinder with a border of *demarcation distally* at the plantar margin or just above it and proximally at the popliteal crease though sometimes the thigh may be affected as well

At some point the opposite limb may commence to develop a similar condition so that both legs may be extensively and symmetrically involved

It is of considerable *interest* to note that red leg ecz^ma tends to develop on the limb which has been the site of previous trauma such as a burn a fracture or

venules of the capillary network changes will occur from local malnutrition Stasis is accompanied by a lowered oxygen content in the blood with raised protein and carbon dioxide levels Oedema occurs partly as a result of damage to the capillary wall and partly on account of the failure of the stagnant venular stream to take up tissue fluid As a result of these changes the skin becomes irritable and the patient is impelled to rub and scratch the affected area

In mild cases erythema with dryness and scaling will be seen but in more severe conditions there will be extensive redness with denudation of the epidermis and profuse exudation or weeping (Fig 202) The area most commonly affected is



Fig 202 —Dermatitis associated with varicose veins the skin around the ulcer is hard and fibrotic

the inner aspect of the lower part of the leg but the entire skin surface below the knee may become affected and there may be patches of dermatitis over the tortuous bends of the varicose saphenous vein above the knee In such acute and extensive cases, there will be gross oedema of the ankle and foot There will also be some inguinal adenitis and a gland in the fossa ovalis may be mistaken for saphena varix In chronic cases the skin becomes thickened lichenified and permanently damaged with underlying fibrosis There may be haemosiderin pigmentation caused by stasis and minute haemorrhages which occur at intervals as a result of trauma Less commonly there may be some melanin pigmentation

Sometimes an indurated plaque will form on the inner and lower aspect of the leg and gradually encircle the limb

Symptoms

The onset of attacks of varicose dermatitis may be determined by fatigue whether this is mental or physical in origin Irritation is the outstanding feature of the symptomatology and it will be aggravated after physical effort or standing for long periods There will be a sense of heaviness discomfort and aching if there is much oedema of the limb and actual pain will be present in the acute phases of

clear-cut with the so-called punched out appearance When healing commences the margins lose their oedema and epithelization takes place over the granulations A feeble or unstable scar usually results which readily breaks down in the absence of continued protection and support

Ulceration below the malleolus may occur independently or it may be associated with ulceration of the leg above the malleolus Some malleolar ulcers may take the form of single narrow linear lesions or they may be crescent shaped and some times there are several small ulcers Usually there is little disability and discomfort but occasionally the patient complains of severe pain and sensitivity and in this event supporting dressings with pressure are badly tolerated The nervous state of the patient is responsible for the symptoms being out of proportion to the physical nature of the lesion and successful treatment of the ulcer will depend upon rectification of the nervous state If the causes of the anxiety state exhibited by the patient can be eliminated or modified local sensitiveness will diminish and the patient s co operation will be assured

Symptoms

In the majority of cases of varicose ulcer there is only moderate discomfort with variable aching and a sense of tiredness and heaviness in the limb after prolonged standing Pain may become severe in the presence of inflammatory complications such as thrombophlebitis acute cellulitis or lymphangitis Pain in the calf muscles is not uncommon and is usually regarded as evidence of deep phlebitis Other causes of pain are the muscular varices and valvular incompetence of the com municating vessels The aching pain and heaviness following standing for lengthy periods may be a result of distension of the saphenous system and of the whole venous network as a result of back pressure

Pain may also be caused by periphlebitis involving the sensory nerves and this may happen in the case of the saphenous nerve and thus account for the saphenous nerve neuritis which is sometimes a feature of the varicose state and of varicose ulceration Cramps and intermittent pain with exercise may be indicative of claudication and investigation should be carried out for occlusive arterial disease Varicose ulcer and the varicose state is sometimes associated with arteriosclerosis obliterans The remarks on the matter of the hypersensitivity of the submalleolar ulcer also apply to the leg ulcer and sensitivity of the ulcer area is sometimes a reflex of the mental state of the sufferer and this factor must be borne in mind

Complications

As already mentioned the commoner complications of the varicose ulcer are cellulitis lymphangitis and thrombophlebitis

Cellulitis —The induration which surrounds the ulcer is a low grade cellulitis but acute cellulitis with pain pyrexia constitutional symptoms of severe degree and general symptoms of toxaemia may develop in the presence of infection with virulent streptococci or staphylococci

Lymphangitis —Lymphangitis may be acute or chronic and repeated attacks may lead to chronic lymphoedema

an old operation area Ultimately, with his red leg scaling in places weeping from denuded areas in others, with some oedema about the ankle and foot and with signs of friction and excoriation the patient regards himself as completely disabled by his bad leg and spends the rest of his days visiting different hospitals and collecting his invalid pension Ulceration frequently develops in red leg eczema is a result of infection in excoriations and such ulcers may become very extensive and closely resemble varicose ulcers but they may be even more recalcitrant to treatment in old cases the skin being unable to respond after years of chronic inflammation with progressive fibrosis

Treatment of ' red leg eczema to be effective necessitates early diagnosis but too often the lesion is diagnosed as varicose dermatitis and is treated accordingly It is a dreadful mistake to encase these red legs in stockings of Unna s paste as the patient rubs the flexible gaiter, and exudate banks up inside the stocking ultimately soaking through while the skin becomes digested and ulceration extends Elderly patients resist the application of a rigid covering to prevent friction but when co operation is obtainable a heavy well fitting plaster of Paris case extending from the toes to well up the thigh will prove of great value A plaster of Paris case should not be applied until it is certain that there is no sepsis present and the plaster should be split down in a few days or indeed at any time if pyrexia lymphangitis or adenitis should occur

Red leg eczema places the patient on the direct road to invalidism many cases classified as varicose dermatitis in out patient departments belong to this group and many alleged varicose ulcers are red leg conditions with superimposed ulceration, the ulceration being initiated by trauma and maintained by infection in the presence of chronic inflammation Gravity plays its part and the lesion is sometimes referred to as a gravitational ulcer Once the outer cylinder of the leg suffers a breach of surface the mechanism of fluid return especially in the presence of inflammation of the skin and subcutaneous tissue is rendered defective and considerable oozing of lymph and serous fluid ensues In other words the inflammation produces effective vascular lymphatic obstruction especially if there is fibrosis or chronic indurated cellulitis as in long standing cases

Varicose ulcer

Ulceration is a late consequence of chronic venous insufficiency and supervenes on varicose dermatitis which has already been described The ulcers usually commence in the vulnerable less vascular area above the inner malleolus but ulceration may occur below the malleolus Once established the ulcer enlarges and may ultimately encircle the lower third or the lower half of the limb and in extreme cases it may extend down to the periosteum The ulcer will be surrounded by a variable border of red induration or chronic cellulitis and this is frequently excoriated by scratching or rubbing The base of the ulcer when infected will be coated with sloughy necrotic material and actual pus may be visible When in a clean condition oedematous wet granulations will be seen There will be a variable amount of exudate according to the treatment which is being applied On occasion the ulcer may weep blood particularly if the limb is allowed to become dependent after a period of rest in bed or immediately after pressure and support have been removed The edge of the ulcer may be heaped up with oedema or sharp and

Arteriovenous fistula —Ulceration is among the late manifestations of arterio venous fistula but recognition of the nature of the lesion is comparatively straight forward if the history of an old penetrating wound has been obtained and the characteristic signs namely a thrill and bruit have been elicited All the complica tions of the varicose state may appear in the late results of arteriovenous fistula Increased venous pressure is the cause of the symptoms which are associated with chronic venous insufficiency

Femoral or ilio femoral thrombosis —Ulceration may also be a late consequence of femoral or ilio femoral thrombosis Thrombophlebitis of these vessels is prone to occur as a post operative complication after parturition and in the course of certain infectious diseases of which typhoid fever is an outstanding example Such thrombosis may also accompany polycythaemia vera visceral carcinoma and car diac disease Idiopathic thrombophlebitis is a rare phenomenon Chronic venous insufficiency is a common though not an inevitable sequel of thrombophlebitis but in those in whom there is any weakness of the veins or a tendency to varicose veins chronic oedema of the limbs may occur with dermatitis and ulceration Boyd (1948) states that superficial varicosities are not compensatory dilatations resulting from deep obstruction Dilatation of superficial veins in femoral thrombosis and in thrombosis of the inferior vena cava is exceptional

Unless the valves of the perforating veins are congenitally defective or absent that is unless the patient has the varicose state reversal of the flow in them is not possible It may be said then that if varicose veins develop they would have appeared in any case

Most authorities affirm that varicose ulceration occurs in the presence of old deep thrombophlebitis This may have escaped recognition or there may have been transient discomfort at the time of its occurrence The prevention of decubitus venous thrombosis demands more intensive inspection and careful supervision of patients confined to bed for any reason While the incidence of deep venous throm bosis is usually stated to be one per cent it is probably higher than this owing to failures of observation Deep pain in the calf or tenderness on palpating the muscle will indicate the onset of thrombosis Heparin or other anticoagulants should be used to limit the process as far as possible If the lesion is not diagnosed until the patient is ambulatory supporting treatment must be applied to the limb at once to prevent swelling which will not respond if treatment is delayed

Ulceration proves intractable in the presence of old chronic cellulitis with re curring lymphangitis as these processes ultimately lead to chronic lymphoedema with permanent oedema of the limb as a result of extensive lymphatic damage

Artefactive ulcer

Self inflicted ulcers may be solitary though they are more frequently multiple and superficial and not uncommonly they may be found on both limbs The ulcers may be produced *de novo* on normal skin or by interference with some trivial scratch or injury which appears to suggest to the emotionally unstable individual the idea of maintaining and extending the lesion The condition is more common in adolescents and young adults especially young women though such lesions may be exhibited at any age The commonest variety is the small rectangular superficial

Thrombophlebitis—Thrombophlebitis will be manifested by pain and tenderness over the affected vein which will be firm and solid to the palpating finger Repeated attacks may lead to occlusion of the vessel Thrombophlebitis of the deeper veins can only be suspected when there is muscular pain and tenderness There may be some constitutional symptoms but these are usually not severe even when the femoral and iliac veins become involved

Differential diagnosis of varicose ulcer

Syphilis—In all cases of ulcer of the leg Wassermann Kline or other appropriate blood serum tests should be carried out The patient may have typical varicose veins and varicose ulcer superimposed on a syphilitic background but if the general disease remains untreated then the prospect of curing the ulcer will be a poor one Syphilitic ulcer of the leg may commence with a solitary gummatous induration which breaks down to form a punched out ulcer, or there may be multiple crusted nodules in an annular or serpiginous pattern and the ulcer which results from necrosis should be readily distinguished As a rule syphilitic ulceration will occur in the upper third of the leg and healing tends to occur slowly with th formation of a typical tissue paper scar with some pigmentation Sometim s however the ulcer will extend with a crusted band of necrosis at the spreading margin In one such case under the writer s observation the ulcer had covered almost the entire inner aspect of the leg and vigorous antispecific treatment was necessary to produce healing

Ulceration associated with perniosis—In this condition the patient with chronic chilblains develops blisters and ulceration on the toes as well as on the dorsum

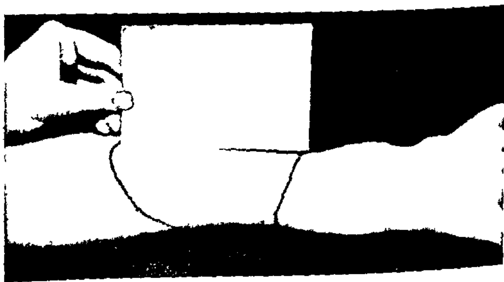


FIG 204—Erythema pernio (chilblain) Possible confusion with erythema nodosum

and sides of the foot during the coldest part of the winter (Fig 204) Such ulceration heals with the advent of warmer weather and in these cases lumbar sympathectomy is effective for a year or two

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ulcer known as the 'postage stamp' ulcer, and there may be areas of superficial necrosis or dark eschars indicating the use of a strong caustic agent On occasion, the ulcer may be large and deep with gross destruction The ulceration may achieve such dimensions and the patient may complain so much of pain and suffering that an unwary surgeon may be induced to amputate, only to find that the stump soon commences to break down and ulcerate Such unfortunate episodes are happily rare

Diagnosis

The diagnosis will be made by recognizing that there is no adequate physical cause for the lesion The general attitude of the patient and some indication of emotional disturbance or instability, will create suspicion in the mind of the observer The situation is one that demands careful handling by the attending physician and the assistance of a psychiatrist may be necessary

Malignant ulcer

Malignant ulcer of the leg is exceedingly uncommon Tumours of various kinds may be associated with ulceration Kaposi's idiopathic pigmented sarcoma and mycosis fungoides are examples Rarely basal cell carcinoma may occur on the leg with the production of a small ulcer but squamous cell epithelioma and prickle cell epithelioma are more frequent Such lesions may arise in the scars of old burns and as a sequel to old radio dermatitis (It may be mentioned here that x ray therapy has no place in the treatment of varicose dermatitis or varicose ulcers) The epitheliomatous ulcer will exhibit the usual characteristics the borders are fleshy, heaped up or everted and the whole lesion is hard, infiltrated and perhaps bleeds easily

Bazin's disease (erythema induratum)

The nodal indurations and ulcerations are distributed symmetrically on the calves and backs of the legs in young girls during adolescence and early woman hood males are rarely affected Patients are usually thick legged and show some coldness and blueness of the affected parts There may also be old scarring and pigmentation from previous ulcerations The controversy concerning the nature of Bazin's disease still rages The number of those inclining to the belief that it is non tuberculous seems to be increasing while some writers postulate tuberculous and non tuberculous types Montgomery O'Leary and Barker (1945) include the non tuberculous variety in a poorly defined group of conditions which they designate nodular vasculitis They insist that Bazin's disease is tuberculous in nature, that true tubercles with giant cell systems are seen and that guinea pig inoculations with material from the lesions are positive Over the years however many writers have stressed their failure to prove the tuberculous nature of Bazin's disease They claim that the giant cells present in the non tuberculous type are merely foreign body types Telford (1937) is equally emphatic that Bazin's disease is a non tuberculous necrosis occurring in the fatty tissues of those with so-called erythrocyanosis or chronic pernio The protagonists of the tuberculous viewpoint assert that the ulcers of pernio are usually more superficial and less destructive than those of erythema induratum and that the inflammatory reaction is less in pernio Telford states that excellent results followed lumbar sympathectomy in his cases

Recurrence of varicose ulcers

Recurrence of varicose ulcers is very common indeed and is usually due to failure of lasting co operation between doctor and patient There is a general lack of appreciation of the fact that the varicose state is progressive and that interven tion at any given point of time with present day methods does not eliminate the disease process Indeed it may do no more than temporarily stabilize the con sequences of the venous defect If the physician realizes the need for follow up and the patient is impressed with the need of enduring co operation the risk of recurrence will be minimized Increasing uncontrolled chronic venous insufficiency may be the cause of recurrence of an ulcer Failure to use an effective form of support with pressure sufficient to prevent oedema will also lead to breakdown

When there is a breach of the skin surface from trauma recurrence of ulceration is favoured as the circulatory balance is disturbed and exudation is facilitated by gravity When trauma is accompanied by infection the risk is still greater These desiderata do not completely cover the situation We are still left with personal issues The patient who rubs is a problem Darier has said that there is no eczema there are eczematous people This implies that there is an eczematous tendency or diathesis Such individuals react with cutaneous manifestations as a result of psychic disorder especially when there is an emotional component Mental fatigue will often be sufficient to cause rubbing and scratching of an old area of dermatitis So in the varicose state even though the mechanical circulatory factors may be maintained in a state of equilibrium nervous or psychological dis turbances may impel the patient to rub the old place and thus dermatitis and ulceration may return unless the situation is handled with care and promptitude

Treatment of varicose ulcers

Varicose ulcers are responsible for much disability suffering and economic loss in the community and proper organization for effective treatment is a matter of some importance It is important for the well being of the patient to minimize suffering and disability and it is important from the point of view of the general hospital that patients with these lesions should not spend so many years as regular attendants in out patient departments so involving the institutions in great expense over the course of a lifetime The best results will be achieved by segregation of these patients in leg clinics which should be staffed by dermatologists and sur geons trained nursing personnel and social workers to assist in the instruction and supervision of the patients In this way the sufferers will be lifted out of the nuisance class of hospital patients and made to feel that some systematized endeavour is being made to control their disabilities Just as there must be close co operation between the specialists concerned the dermatologist and the surgeon so there must be enduring co operation between doctor and patient as the price of freedom from recurrences and other complications of the varicose state or chronic venous insufficiency All large general hospitals should have leg clinics and the medical staff of such clinics should be particularly interested in the problems of peripheral vascular diseases

The treatment of varicose ulcer is the subject of perennial controversy as the correspondence columns of medical journals show There are endless variations on the main accepted themes these variations include support of some kind

ulcer known as the postage stamp ulcer, and there may be areas of superficial necrosis or dark eschars indicating the use of a strong caustic agent On occasion the ulcer may be large and deep with gross destruction The ulceration may achieve such dimensions and the patient may complain so much of pain and suffering that an unwary surgeon may be induced to amputate only to find that the stump soon commences to break down and ulcerate Such unfortunate episodes are happily rare

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When ulceration is extensive rest in bed is desirable and the point at which it become obligatory is a fine question for the medical adviser In general it may be said that when oedema and cellulitis are not being well controlled and particularly if pain and lymphangitis are present rest in bed is indicated The same may be said when there is evidence of thrombophlebitis The majority of ulcers will respond however to ambulatory treatment if it is carried out efficiently

Pressure and support

When infection has been controlled the chief local measure will be the application to the ulcer of a suitable pressure pad which will be held in position by a selected type of elastic bandage or stocking support A piece of sponge rubber of suitable size and thickness and shaped to fit the part is most commonly used

Oedema of the edges and of the granulations in the floor of the ulcer will be reduced by pressure and at the same time the gravitational serous discharge will be lessened The selection of a bandage or suitable stocking support is the next problem and one which is the subject of much controversy Unna s paste is still widely used in public institutions though it has been supplanted to a great extent by specially impregnated bandages which can be speedily applied in sections Allen Barker and Hines (1948) advocate the use of a rubber bandage which is more generally approved than any other supporting measure

Stockings of Unna s paste whether applied in the old fashioned way or in the form of impregnated bandages provide a comfortable dressing but they are not an effective support They should be removed if the ulcerated area or its environs become irritable sore or painful and certainly whenever the external surface shows staining from exudate The complete abandonment of the Unna stockings as a therapeutic measure in public hospitals would be a forward step as their use or misuse so frequently bears no relationship to common cleanliness or common sense Most elastic stockings are inefficient unless they are made to fit well and are of sufficient thickness and strength They should have a footpiece with heel and should extend to the knee flexure Above the knee they are without effect The ordinary *crepe* bandage is useless

Elastoplast bandages may be applied in the usual way or reversed with the adhesive side outwards and the bandage then is covered by a roller gauze bandage to protect the clothing the difficulty of sensitization to the adhesive is thus overcome In all cases the bandage should commence just proximal to the toes should include the heel and extend to the knee and it must be applied with adequate firmness and worn whenever the patient is ambulatory

Sclerosing injections

Sclerosing fluids sometimes called sclerosants have been unduly praised and abused in the treatment of varicose veins The number of these agents available is large and there are fashions in their usage Sodium morrhuate was one of the earlier preparations but it has largely been abandoned because of the frequency of severe allergic effects with generalized eruptions Quinine and urethane is an effective sclerosant but is apt to cause painful induration and necrotic ulcers if the vein is missed Lithium salicylate is often used and milder but less effective sclerosants

with or without pressure pads at the site of the ulcer sclerosing injections and ligation of the saphenous veins

While there is *general agreement on the principles* of treatment there are innumerable differences in the details of their application and each worker in this field devises a technique or ritual of greater or lesser elaborateness according to his fancy This situation is common to many medical procedures but is peculiarly well illustrated in the matter of the treatment of varicose ulcers

It is usually accepted that infection will delay the healing of any damaged area so it would appear almost axiomatic that infection must be eliminated as far as possible before any other steps will have their maximal effect All leg ulcers will require some preliminary cleansing but the extremely neglected varicose ulcer *may be foul and malodorous with a sloughy necrotic floor, purulent discharge* and surrounding chronic indurated cellulitis

In the majority of cases, frequent warm saline baths will be effective but the dirty ulcer in addition may require fomenting

Hydrogen peroxide in saline baths may prove beneficial and numerous antiseptics have their devotees It is important that the antiseptic should be used in weak concentration and that the patient should not be allergic to the one selected Antiseptics are not necessary though they may have some attraction as deodorants in the early treatment of foul ulcers

Discretion must be exercised in the use of dye paints such as gentian violet which is commonly applied in a one per cent aqueous solution Repeated paintings *produce a hard cake or coagulum on the ulcer and this delays healing* Vitamin preparations in ointment form have no special virtues and the transient reputation acquired by cod liver oil ointment is possibly due to the fact that the lesion was receiving the advantages of a soft paraffin dressing after various insults with noxious chemical bearing unguents The use of sulphonamides in powder or ointment form is not regarded as good practice They are of doubtful value and it is generally accepted that sensitization may be invoked by their external use Penicillin on the *other hand is of great value in the treatment of infected* ulcers and may be used as a powder in a solution or in ointment form provided that its application is repeated every few hours on account of its loss of potency Penicillin sensitivity is rare but the possibility should be kept in mind Penicillin may also be administered parenterally whenever such complications as acute cellulitis or lymphangitis develop

Every new antiseptic and antibiotic finds advocates who aver that the new preparation will heal leg ulcers *Local applications merely help to clean the ulcer* there is no external application which can accelerate healing Streptomycin and tyrothricin are now recommended for local application As in the case of penicillin their value will be limited to the elimination of those infective organisms which are sensitive to their action A recent innovation is the use of powdered red blood cells but this preparation is of little value

Rest

The patient with chronic venous insufficiency should always avoid standing for lengthy periods even when the limb is receiving support in the form of a bandage or special stocking If an ulcer is present this rule should be more *strictly observed*

the limb should be kept still for 5 minutes and then moved briskly to disperse the sclerosant into the general circulation

Ligation and other surgical measures

High ligation of the saphenous vein is carried out close to its junction with the femoral vein The accessory saphenous vein and all other tributaries must be ligated at the same time There is great diversity of opinion as to whether this operation should be performed in the ambulatory patient but current opinion favours rest in bed for a period of from one day to one week Dickson Wright (1948) advocates general anaesthesia with multiple ligatures and the injection of all varices with a total quantity of 100 millilitres of 30 per cent saline The leg is then bandaged with Elastoplast to reduce the bulk of clots and to minimize clot formation Wright states that one night in hospital suffices for all this because it is important to get the patient out of bed as soon as possible

Boyd (1948) advocates that proximal ligation of the saphenous vein should be accompanied by distal ligation at levels at which the perforating veins have been found to be incompetent He defines the various technical difficulties in the operation of high saphenous ligation and stresses the need for avoiding damage to the femoral vein Boyd rejects the practice of retrograde injection of sclerosing agents at the operation as deep phlebitis may follow He confirms the observations of Kinmonth that the fluid injected rapidly passes into the deep femoral vein On the other hand below the knee very little sclerosant enters the popliteal vein unless a perforating vein of moderate size is present

The contra indications to operation include obesity unstabilized diabetes mellitus cardiac disease and any severe constitutional condition such as arterio sclero is Operation should not be undertaken if there is any occlusive arterial disease in the lower limb Pregnancy is not regarded as an absolute contra indication to treatment Intervention is permissible if there is disability but never for cosmetic reasons alone Infection in or around an ulcerated area must be eliminated prior to surgical intervention

Grafting

Various forms of skin grafting are used to hasten healing of large ulcers and they are sometimes used to replace unstable scars which have broken down Properly utilized skin grafts will provid a stronger and more resistant epithelial covering than that which follows the slow process of normal healing in areas of low vascularity such as the lower leg Grafting demands careful pre operative treatment of the ulcerated area with elimination of infection and oedema Grafting will not succeed wh n there is dense fibrosis and long-continued chronic indurative cellulitis around the ulcer Such damaged tissue must be removed

Pinch grafts —These grafts provide islands of regeneration and are of some value if the ulcer has been adequately treated beforehand The procedure is not highly regarded

Split skin grafts —Split skin grafts are favoured by some surgeons and again pre operative preparation of the ulcer is important Such grafted areas are apt to break down with trauma and protective support is necessary after operation

of the Ethamolin type are in common use Skin testing with the sclerosant to be used should be carried out beforehand to detect hypersensitivity Melkon and Scheidell (1947) report that severe allergic reactions may occur despite such precautions, nevertheless the tests should be made

Sclerosing injections should not be used above the knee nor should they be used in the region of the junction of the lesser saphenous vein with the popliteal vein behind the knee owing to the risk of damage to the deep vessel

Sclerosants should not be used after recent phlebitis or when there is a family or personal history of recurrent phlebitis Sclerosants alone are not effective in the management of the varicose state The sclerosing effect varies in different patients recanalization occurs frequently and, as the varicose state is a progressive disease new varices may continue to appear

Venograms or skiagrams made after injection of radio opaque substances can give important information particularly in the matter of deep phlebitis and obstruction but as the technical difficulties are considerable and the procedure is not without danger they have little clinical use the tests with the tourniquet being satisfactory and adequate for most practical purposes

Kinmonth *(1948)* used venography to demonstrate the *distribution of sclerosing* fluids injected into the saphenous vein near the sapheno femoral junction at operation or by means of a catheter passed through an incision in the groin His conclusions are of very great importance and show the inefficiency of retrograde sclerosing injections at operation He found that much of the dye went straight into the deep veins and very little went below the knee level

When a catheter was inserted into the saphenous vein spasm occurred as a result of irritation and little of the injected fluid stayed in the vein *Fluoroscopic screening* showed that dye injected into varicose veins rapidly sinks toward the ankle if the patient is standing If the patient is recumbent however the dye remains at the site of injection until the limb is moved Other impressive observations include the fact that the fluid passing into the deep veins remains there for a minute or more after injection, and for a still longer period remains in the communicating veins *with traces hanging in the region of the valves* and so these susceptible structures *may be damaged and rendered incompetent by sclerosants*

Kinmonth also carried out histological studies of the veins subjected to sclerosing injections Small pieces of vein were excised at operations on patients *who had* received injections of sclerosing fluid a few days previously Even when there had been no clinical evidence of effective clotting and no local tenderness the vein wall showed very definite changes macroscopically and microscopically The changes namely clot formation and oedema of the wall occurred most markedly in *the region of the valves* and microscopic examination disclosed damage to the valves and their involvement in adherent clot though the sclerosing injection may have been regarded as a *failure clinically* Kinmonth *concludes* that high saphenous ligation should not be accompanied by retrograde injection and Boyd s findings (1948) confirm this view When sclerosing *injections are ineffective* they may be harmful, especially when recanalization occurs as the valves will have been damaged When simple varices are given injection treatment *the limbs should be horizontal* and the vein empty The quantity of fluid used should be 1–1½ millilitres

selected with care and discrimination Morphine and its equivalents should never be given

Diet

It is desirable that obesity should be reduced if the patient is much above the normal weight level for his age and height as the carrying of unnecessary weight imposes a greater burden when the circulation is impaired by chronic venous insufficiency The diet should be rich in protein and vitamins especially when there is extensive ulceration and exudative dermatitis Vitamin A is greatly favoured and rutin is frequently prescribed It is claimed that vitamin E should be given to all patients with peripheral vascular diseases in doses of 200–300 milligrams per day Vitamin E is usually administered in the form of wheat germ oil

Summary

(1) The varicose state with chronic venous insufficiency is the consequence of congenital weakness of veins with defect or absence of valves

(2) Dermatitis may develop and ulceration is a later sequence Ulceration is associated with old thrombophlebitis of the deep veins Ulcers are classified in all sorts of groupings by different surgeons but each case must be considered as an individual problem and ligation and other measures carried out according to the particular indications

(3) The treatment applied most frequently in general practice takes the form of (a) high ligation of the saphenous vein and of all tributaries without retrograde injection of a sclerosant at operation (b) ligation above the knee with excision of a length of vein and the perforating vein so constantly present in the lower third of the thigh (c) ligation below the knee of the communicating vein between the two saphenous systems where it is pre ent and (d) retrograde injection of varices with sclerosing fluids below the knee This is without risk unless there is a large perforating vein as sometimes happens in the upper part of the leg The aim of these procedures is complete obliteration of the saphenous channel from groin to ankle

(4) Once ul eration has occurred support will be necessary throughout life especially if the ulceration has been extensive Support means support with pressure adequate to squeeze the veins and tissues and so prevent oedema Grafting sym pathectomy or any other procedure will not eliminate the necessity of adequate protection and support This is the price that must be paid if recurrence is to be avoided

(5) The varicose state is a progressive disease No routine procedure or single operative manoeuvre is universally satisfactory or curative

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Crossed leg flaps —The crossed leg flap technique will provide the best covering for an ulcer This method makes great demands on the patient, involving as it does prolonged immobility and great discomfort from the fixation of the lower extremities

Precautions —Infection is fatal to all skin grafts and penicillin is usually administered parenterally for some days after the operation to minimize the risk It must be emphasized that grafting is not in itself a permanent solution to the problem of the healing of a varicose ulcer and that frequently grafted areas break down and the ulcer is restored to its former dimensions unless adequate support and protection is provided thereafter and the other conservative measures for the treatment of chronic venous insufficiency are strictly observed

Sympathectomy

Many claims have been made for lumbar sympathectomy as a procedure which increases the vascularity of the corresponding limb and assists the healing of recalcitrant ulcers There is considerable doubt about the value of this measure and Allen Barker and Hines (1948) regard the operation as being useless and unsound in principle On the other hand Borrie and Barling (1948) report rapid healing of ulcers in 4 patients treated with lumbar sympathectomy although recurrence ensued in 1 patient Their results suggest that the operation may be helpful in cases of ulceration with coldness and blueness of the extremities It is clear however, that it could not have any useful effect on old ulcers with surrounding fibrosis when ischaemia is responsible for the failure to heal If improvement in the colour of the ulcer and the surrounding skin occurs after paravertebral block it may be taken that lumbar sympathectomy would have a favourable effect Sympathectomy is an operation that has some mortality and it is difficult to accept the view of Borrie and Barling that it is a justifiable measure as a preliminary to skin grafting Sympathectomy has a very small place if any in the treatment of varicose ulcer and chronic venous insufficiency

General measures

It is important to consider the living conditions of the patient with chronic venous insufficiency and more especially when the process has advanced to ulceration Ambulatory home treatment is not likely to prove effective if the patient is unable to have adequate rest and has not the means or ability to carry out prescribed treatment effectively Large general hospitals may be able to provide social service workers to assist in these difficulties The occupation of the patient must receive special attention and appropriate alterations must be made when the worker is required to stand for long periods and particularly if physical effort is required in the upright posture Other causes of fatigue should be eliminated when possible The general health of the patient should be reviewed and the abnormalities treated septic foci being removed anaemia treated by suitable measures and advice given on personal hygiene

Sedatives

If there is much pain with varicose ulceration it may be caused by inflammation and infection or by neuritis of the saphenous nerve and when the pain is intermittent arterial disease with claudication should be suspected Sedatives must be

selected with care and discrimination Morphine and its equivalents should never be given

Diet

It is desirable that obesity should be reduced if the patient is much above the normal weight level for his age and height as the carrying of unnecessary weight imposes a greater burden when the circulation is impaired by chronic venous insufficiency The diet should be rich in protein and vitamins especially when there is extensive ulceration and exudative dermatitis Vitamin A is greatly favoured and rutin is frequently prescribed It is claimed that vitamin E should be given to all patients with peripheral vascular diseases in doses of 200–300 milligrams per day Vitamin E is usually administered in the form of wheat germ oil

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CHAPTER 31

CHILBLAINS

G B MITCHELL HEGGS

CHILBLAINS are a commonplace occurrence of every English winter and in Great Britain there is ample opportunity for observing these lesions They are produced by damp cold not by frost and have a sharply marked geographical distribution in the world

Geographical distribution

Chilblains are most commonly seen in the British Isles parts of Northern France Germany Denmark Scandinavia Poland Turkey Australia and New Zealand In other parts of the world such as North America where the winters may be colder but not so damp the common chilblain occurs so rarely that it may be missed This fact is reflected in the medical literature on the subject practically all of which has been written in the countries affected

Aetiology

Chilblain patients at all times of the year are inclined to have colder hands and feet than normal people and in cold weather they often suffer from general cyanosis of the extremities Chilblains themselves occur almost exclusively in winter in cold damp weather Prolonged or repeated immersion of the hands in cold water or severe chilling followed by a quick warm up at a fire or stove may precipitate an attack As the weather gets warmer the chilblains disappear spontaneously but in severe cases they leave their mark The subcutaneous tissues remain slightly thickened and the overlying skin is a shade darker than normal if ulceration has occurred small pitted triangular scars may be seen Chilblains are liable to recur each winter in the same site but so far there has not been a satisfactory explanation of the fact that they may occur one winter but not the next and reappear again the following season even when the sufferer remains in the same environment and is subject to the same climate for the whole period

Site

The commonest sites of occurrence are the fingers and toes particularly the dorsal surfaces and the outer side of the little finger The thumb is seldom affected although the great toe suffers equally with the other toes The parts of the fingers between the interphalangeal joints seem more susceptible than those at the joints themselves The feet ankles and lower parts of the legs are next most frequently affected Chilblains of the legs occur more often in women probably partly owing to the fact that they do not have the protection from the cold which is afforded by trousers In this site the lesions are of a more chronic and lasting nature and are associated with greater swelling and oedema This type of chilblain is known as

erythrocyanosis frigida crurum puellarum In these cases the thickening of the subcutaneous tissues the oedema and the discoloration of the skin may persist throughout the year, the pathology is essentially the same as that of chilblains occurring elsewhere on the body and the differences are due to the change in site

Occasionally chilblains are found in other situations such as the lobe of the ear or the tip of the nose Occupation also influences the site affected for instance people whose work involves hours of standing develop lesions on their toes and feet while in sedentary workers the lesions are inclined to occur on the fingers I have seen two *patients with chilblains of the buttocks*, *in each case the patient* was rather obese and the affected part was pendulous The patients were land girls who had been driving tractors out of doors and had presumably spent some hours in wintry weather sitting on a cold metal seat

Winner and Cooper Willis (1946) state that 70 per cent of lesions occur on the *lower extremity as a whole 28 per cent on the upper extremities* and 2 per cent in other sites

Incidence

Chilblains occur in childhood adolescence and early adult life They are less common in old age and seldom develop for the first time after the age of 40 years Young people between 10 and 20 years of age are most frequently affected and sometimes spontaneous remissions occur after the age of 20 years Women are believed to be affected more frequently than men research has shown *that* by the time they reach 40 years of age 50 per cent of women have at some time in their lives experienced chilblains comparative figures for men are not available

Pathology

Histology

Chilblains erythrocyanosis of the legs and trench foot are all manifestations of the same disease differing in site and severity The histological changes are those of a chronic or subacute inflammation (Lewis 1941) There is dilatation of the subcutaneous capillary blood vessels with oedema diapedesis of the red and white cells and *perivascular infiltration Later hyperplasia develops in* the connective tissue cells in the dermis and in the epidermal cells themselves

Circulatory changes

There is prolonged defective oxygenation of the tissues and if ulceration occurs *the processes of repair are sluggish and inefficient* The local circulation of the blood is sluggish for two reasons In the first place the local vessels are dilated delaying the flow of blood already there in the second place, less than the normal flow of blood is reaching the part as the arteries and arterioles of the affected limb are in a state of chronic spasm This spasm of the arterioles appears to be the essential cause of the lesion and research has shown that the behaviour of the arterioles in subjects liable to chilblains differs from that of normal people when exposed to cold

The normal response to local cooling of a certain degree (cooling to 10° C for 10 minutes *was used experimentally by Burckhardt* and Schroeder 1944) is spasm of the arterioles supplying the part This spasm is a protective mechanism on the

part of the body to prevent excessive general loss of heat When the limb is allowed to warm up again the whole body being kept at a comfortable temperature the spasm should relax and the temperature of the cooled part should approximate to that of the rest of the body within 10 minutes This happens in normal subjects but in chilblain sufferers the rate of recovery is much slower usually taking more than half an hour

The same workers discovered that if only slight cooling was applied to the limb the rate of recovery did not vary in normal persons and chilblain subjects They account for this by the fact that in slight cooling spasm of only the capillaries takes place but in prolonged cooling it is the deeper arterioles that go into spasm and it is these vessels which are abnormal in the sufferer from chilblains

The temperature recovery curves vary considerably among the abnormal cases In some patients the curves are normal in summer but are delayed in winter and in other cases the rate of recovery remains slow all the year round

It has b en found (Lewis 1941) that if the hand of a chilblain subject is kept warm and the whole arm is warm the reaction of the skin of the hand to three different stimuli is normal The stimuli used in these tests were short exposure to cold intradermal injection of histamine and simple injuries of any kind However the limb of chilblain subjects are habitually abnormally cold and therefore their habitual reaction is abnormal The underlying cause of chilblains therefore appears to b the low temperature of the affected limbs which is due to the high vascular tone of the limb vessels the readiness with which they go into spasm in response to cold and the delay in release of this spasm in warmer surroundings

It has never been explained why chilblain subjects should b afflicted with such abnormally tonic limb vessels nor has it b en explained why only *damp cold* produces these lesions It was at one time b lieved that chilblains were associated with an alteration in the coagulability of the blood but this has never been confirmed by research and the blood calcium is consistently normal As Ob rmer (1948) points out however a normal blood calcium level does not necessarily mean a normal calcium metabolism and the relevance of the calcium factor is supported by the greater incidence of chilblains during the years in which bones and teeth are growing and the great benefit often gained from calciferol Various other causes have been suggested—general dietary deficiency deficiency of vitamins A D or B hypothyroidism hypogonadism pituitary dysfunction focal sepsis and intestinal toxaemia

Associated conditions

It has b en noted that there are certain pathological conditions which are frequ ntly accompanied by chilblains There is a higher incidence among tuberculous patients than among the general population and in fact chilblains have b en held by some to be tuberculous processes themselves Limbs affected by neurological complaints such as syringomyelia or poliomyelitis are more liable to develop chilblains because of the lowered local temperature resulting from disuse Diseases of the peripheral blood vessels such as acrocyanosis Raynaud s syndrome and thrombo angitis obliterans also give an increased local susceptibility

The prevalence of chilblains in young women suggests an endocrine cause but it may be explained more simply by their different habits in comparison with men

as regards warm clothing of the extremities It would be interesting to know whether erythrocyanosis of the legs was a common condition in the days when women habitually wore long skirts

Clinical features

A chilblain is not a minor form of frost bite it is an entirely different process as is evident when the pathology of the disease is considered The lesion appears first as a rounded or oval swelling dull red in colour and warm to the touch slightly raised from the surrounding skin and divided from it by an indefinite edge During the development of the lesion itching and tingling sensations are constant but after the first few days these may give way to pain and tenderness At this stage the colour changes becoming purple or blue the overlying skin becomes thickened and slight scaling may occur In severe cases blisters containing yellow serous fluid may appear, these eventually burst and give rise to shallow indolent ulcers Ulceration may also follow abrasion or scratching of the chilblain without the intermediate bleb formation

Differential diagnosis

The diagnosis is usually easy from the appearance and history, but occasionally one should consider less common conditions For instance there may be a pathological vascular spasm of the limbs such as in Raynaud s disease thrombo angiitis obliterans or acrocyanosis The appearance in these cases is not unlike that of erythema nodosum on the shin, and erythema multiforme with lesions on the hands feet and lips, the nodulo cutaneous tuberculide of Bazin should also be considered when the posterior aspect of the leg is almost equally thick from calf to ankle Other possible conditions when a single lesion is being considered are granuloma annulare and chronic bacterial infection of one or more pilo sebaceous follicles

Treatment

Innumerable chilblain remedies have been suggested and tried In an investigation among women in the Services (Winner and Cooper Willis 1946) 78 different treatments were claimed by sufferers to have been helpful The treatments vary enormously and many appear to have little rationale Included among the suggestions for local application were whisky chalk and vinegar roasted onion onion dipped in paraffin urine raw potato and snow Various proprietary ointments and lotions were mentioned as well as different types of baths exercises and diets and internal medicines Generous doses (appropriate to the age of the patient) of calcium and vitamin D or nicotinic acid and vitamin K were the most popular

Sympathectomy was suggested by Goldsmith in 1936 and the less drastic process of paravertebral sympathetic block was later described by Simmons (1945) By injecting amethocaine round the sympathetic roots he effected a relief of arterial spasm with an effect more lasting than the temporary local anaesthesia He accounted for this by the theory that arterial spasm gives rise to suboxygenation of the tissues which in itself gives rise to further spasm thus forming a vicious circle which is broken by the temporary local anaesthesia

The following have also been recommended for the treatment of chilblains grenz rays (Goldsmith 1936) fluorescein (Lefevre and Dubarry 1941) histamine and bee venom (Watson 1941) passive hyperaemia (Herxheimer 1942) and Priscol a proprietary name for benzylimidazoline (Brack 1941) During the experiments of Burckhardt and Schroeder mentioned earlier which compared the rate of temperature recovery after cooling in normal and chilblain subjects this preparation Priscol was investigated It was found to improve the rate of temperature recovery if injected after the exposure to cold but it did not have any effect if injected before the experiment this does not suggest that it is likely to be of clinical value

Preventive methods

It seems generally agreed that the most important factor in the prevention of chilblains is to keep the subject and particularly the limbs warm Tight restrictive clothing should be avoided as this helps to reduce the peripheral circulation Shoes must be roomy enough to accommodate any extra woollen socks or stockings that are worn

Any improvement in the general health is likely to reduce the incidence of chilblains Brisk exercise is helpful as a circulatory stimulant and when out of doors in cold weather chilblain subjects should take care to keep moving and not stand about Many chilblains of the feet are probably the result of standing in queues Hasty warming up of the hands and feet by a fire should be avoided as this practice seems to precipitate the development of lesions

Other methods of treatment

In addition to the preventive measures already mentioned it has been found that the application of a counter irritant relieves itching pain and discomfort A good ointment for unbroken chilblains is Chillie Paste (B P C)

Oleores Capsic	2 g
Menthol	10 g
Chloral Hydr	10 g
Camph	10 g
Paraff Moll Flav	68 g

Another approach is to improve the peripheral circulation by the administration of vitamin B complex or nicotinic acid alone or by means of short wave diathermy or wax baths General ultra violet light therapy to the whole body sometimes produces an improvement in the local condition

In spite of these treatments the skin sometimes cracks These cracks frequently heal if they are filled with friar s balsam or covered with plastic skin or strapping

Prognosis

The individual prognosis for any one chilblain is always good it will disappear when the weather gets warmer leaving little or no scarring There are no serious complications of chilblains and in themselves they are seldom grossly disabling

They may, however, cause much discomfort, inconvenience and temporary disfigurement to the sufferer and they are likely to recur Until more is known of their ultimate cause and prevention the prognosis as a whole is not good One may encourage patients with the fact that, on the whole, chilblains tend to disappear in old age but this may be because the patients themselves learn the lesson of their experience and take more care to avoid them

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CHAPTER 32

THE RETICULOSES AND KAPOSI'S SARCOMA

J FERGUSON SMITH

PART I

THE RETICULOSES

DEFINITION

THE DISEASES of the skin which are today commonly grouped under the name of reticulosis cutis are not very common but they are worthy of some attention from the practitioner by reason of their bad prognosis It has been said cynically that a doctor gets more kudos from an accurate prediction of the date of death than he does from curing his patient The reticuloses of the skin have as a common factor one or other of those sinister affections of the reticular system to which different names have been given such as mycosis fungoides lymphadenoma cutis leukaemia cutis and reticulum cell sarcoma but which so merge into one another as to make a clear-cut differentiation impossible in the present state of our knowledge although most cases can be fitted into one or other of these categories

MYCOSIS FUNGOIDES

The name mycosis fungoides was given by Alibert in 1832 to a peculiar disease in which tumours spring up very rapidly in the skin almost like mushrooms in the night as the name suggests in its mingled Greek and Latin (Figs 205–208)

The earliest phase is most often an eruption of red scaling patches fugitive perhaps at first but later becoming relatively fixed and also infiltrated so that they have been likened to orange skin The patches usually have sharp margins and may coalesce so as to involve large areas commonly with islands of apparently normal skin (*Fig* 209) These patches may involute spontaneously sometimes leaving pigmented stains but they tend to persist Itching is often intense After weeks months or even years tumours begin to appear on the infiltrated plaques They are rather soft usually *deep red in colour* and have been likened to tomatoes embedded in the skin They grow with great rapidity and ulcerate early and the ulcers may heal spontaneously with scarring or may persist (Fig 210) They increase in number and the patient dies of exhaustion or septic infection Sometimes there are longer or shorter remissions and apparently permanent recovery has been recorded by MacCormac (1933) as following an attack of erysipelas Sometimes the premycosic phase takes the form of poikiloderma that is telangiectasis pigmentation and atrophy and this may last for many years before the appearance of tumours Dostrowsky and Sagher (1945) of Jerusalem have recorded such a case and I have watched what was clinically Jacobi s type

of poikilodermia from the onset at the age of 16 years, to death at the age of 35 years with the full picture of mycosis fungoides In yet other cases the tumours may come without the prodromal eruption, and to this group the French have given the name *mycosis fungoides a tumeurs d emblee* (Fig 211)

The foregoing account is of the classical type of mycosis fungoides but for many years past cases have been described which had during life an eruption which was

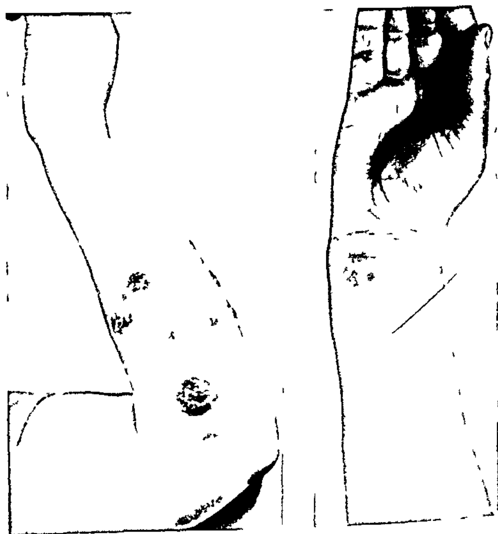
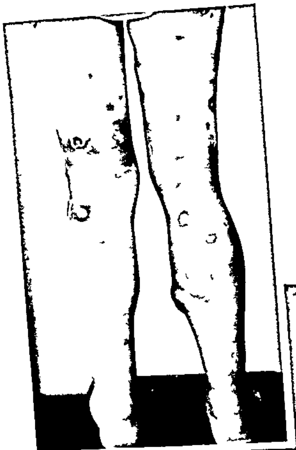
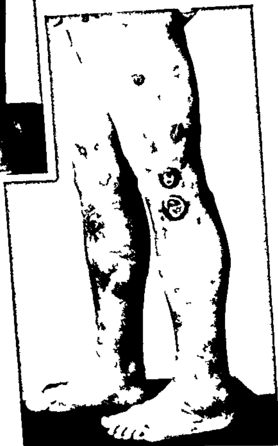


Fig 205—Mycosis fungoides of 12 months duration in a patient aged 50 years showing ulcerous infiltration

considered by experts to be mycosis but showed *post mortem* lesions in the viscera diagnostic of lymphadenoma and I have observed a considerable number of cases which seems to me to constitute an unbroken series linking lymphadenoma cutis with classical mycosis fungoides I have watched a fugitive urticaria like eruption become fixed and infiltrated until the picture was characteristic of premycosis and then followed gradual enlargement of all the accessible lymph nodes An excised





Fı(06 Mycosis fungoides same case as in Fig ?05





FIG. 207.—Same patient as in Fig. 206 70 days later



FIG 08 —Same as case in Fig 206 showing pro ression of the infection 17 months after onset

gland was found to be lymphadenomatous and the patient died of lymphadenomatous cachexia some five years after the onset and after several fairly long spells of reasonable health which were the results of x ray treatment No tumours ever appeared in his skin By contrast, I saw a man of 70 years of age with an eruption diagnosed as seborrhoeic eczema but which was rather thickened, and very itchy In the course of two years or so numerous small tumours appeared in his skin They did not ulcerate and in many instances involuted spontaneously, leaving atrophic scars The earlier biopsies showed an indeterminate histological picture but later



FIG 209 —Premycosis



FIG 210 —Mycosis fungoides

ones showed a lymphadenomatous structure His lymph nodes never enlarged At times too premycosis merges into erythrodermia and the patient may die before any tumours appear



FIG 711 —*Mycosis fungoides a tumeurs d'emblee*



FIG 712 —Lymphadenoma cutis

LYMPHADENOMA CUTIS

Although I have stated above that I do not think that a sharp boundary line can be drawn between mycosis fungoides and lymphadenoma cutis I readily admit that there are cases which fall obviously into one or other of these two groups Probably a majority of all cases of Hodgkin's disease have pruritus as a feature at one time or another, and perhaps the commonest objective eruption is one which resembles prurigo, with pale papules mostly follicular and better felt than seen Scratch marks are commonly the most prominent features and it is possible that scratching is mainly responsible for the visible signs, as the itching may be equally severe without objective signs There are no specific histological changes in the skin in these cases erythroderma may develop and it is less rare in lymphadenoma than in mycosis fungoides Here too the histological changes are banal and not diagnostic and only if there are accessible and affected lymph nodes can a microscopic diagnosis be made Infiltrated plaques or nodes of a dusky red colour and with a strong tendency to ulcerate are rare occurrences and they may or may not show a typical Hodgkin architecture Definite tumours with this structure are very rare Deep lymphadenomatous masses may reach the surface and ulcerate through the skin In most cases the skin involvement is not the first sign of the disease and the course does not differ from that of cases without skin lesions Treatment may clear the skin, as it can cause shrinkage of enlarged glands but it is doubtful if it alters materially the inexorable course of the disease

LEUKAEMIA CUTIS

As in lymphadenoma so in leukaemia we may find eruptions of different types, and the skin lesions in the two groups run parallel The uncharacteristic prurigo like itching eruption may go on to erythroderma purpura is seen mostly in acute cases, and circumscribed nodes often plum coloured and extensive infiltrations may occur Leukaemia cutis is most often of the lymphatic variety but all types of skin involvement have been recorded in the myeloid and even monocytic forms Lymphoblastic infiltrations and tumours may occur without an excess of lymphocytes in the circulating blood and in other cases the degree of lymphaemia may vary greatly from time to time Leukaemic erythroderma is commonly of a deep red colour, and though scaling may be profuse it is usually less than in dermatitis exfoliativa of Wilson or erythroderma secondary to psoriasis The surface is sometimes glazed areas of weeping are common and itching is intense The hair and nails may fall but the mucous membranes are unaffected The lymph nodes liver and spleen are enlarged though the last two organs may not necessarily be palpable There is usually an irregular pyrexia and the patient is obviously toxaemic, and becomes progressively weaker Death ensues after weeks months or even years

The peculiar greenish tumours which have been called chloroma are seen most often in children and their favourite site is the orbit The skin is involved secondarily They have a lymphoblastic structure and often show lymphaemia The greenish pigment has however been found in other types of growth recently, so that chloroma is probably not a disease *sui generis* and it does not call for separate description It is rapidly fatal

AETIOLOGY

Circumscribed nodes with lymphoblastic structure are seen perhaps most frequently on the legs and in chronic lymphatic leukaemia They are often plum coloured and they may occasionally be found in the absence of lymphaemia although this may develop later In the absence of lymphaemia there may be no obvious enlargement of the spleen or lymph nodes and the patient may remain in good general health for years In acute leukaemia of any type extensive diffuse infiltrations are a rare phenomenon and Fig 213 shows an almost leonine



FIG 213 —Skin infiltration in acute myeloblastic leukaemia

facies in a case of acute myeloblastic leukaemia I have also seen a few scattered bright red nodules in association with purpura haemorrhagica shortly before death from a ute myeloid leukaemia

RETICULUM CELL SARCOMA

This term has been attacked as b ing too comprehensive inasmuch as all sarcomas are derived from connective tissue cells which are capable of forming reticulum Here I would confine it to those neoplasms which appear in the skin often very suddenly in a manner reminiscent of mycosis fungoides which are locally destructive and which also form metastases They are usually very radio sensitive but because they metastasize rapidly treatment is only of temporary avail They may be single or multiple and their colour ranges from deep red to that of normal skin I have not observed ulceration but this may be because of the local success of roentgen therapy These sarcomas are usually fatal in a few months

AETIOLOGY

The actual cause or causes of this whole group of conditions are quite unknown Cases which develop in the course of years seemingly out of some benign

dermatosis, such as psoriasis or poikilodermia lend support to the view put out by Robb Smith (1944), that reticulosis is the result of long continued stimulation or irritation of the reticular system much as cancer is produced by long exposure to certain irritants Experimental production of cancer has shown that for a time the changes in the skin are reversible and the same may be true of those in the reticular system, but it must be admitted that it is only in a small minority of cases that the reticulosis can be seen to arise on a pre existing simple dermatosis An infective agent has often been postulated, but never found, in spite of intensive research Gordon (Gordon and Gow 1934) claimed to have found elementary bodies of a virus, but his claims have not met with general acceptance and if they are correct *one can only say that lymphadenoma differs very widely from any other known* human virus disease In the case of leukaemia, figures from the United States of America show a statistically significant excess of leukaemia in radiologists as compared with the rest of the population but this affords no obvious clue to the cause in the great majority of cases

PATHOLOGY

In the premycosic stage there is a heavy cellular infiltration in the corium sometimes concentrated round the vessels and appendages but often diffuse and often

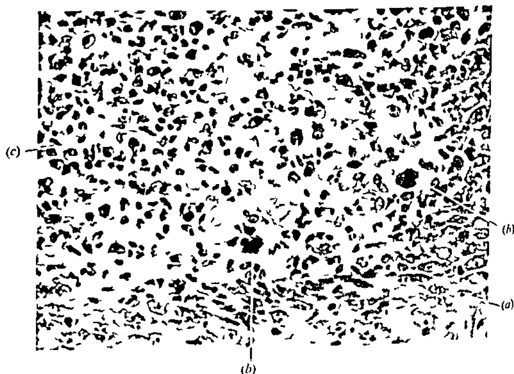


Fig 214 —Reticulosis cutis giving a lymphadenomatous picture (*a*) epidermis (*b*) small multinucleated cells (*c*) infiltration of lymphocytes polymorphs eosinophils plasma cells and larger mesenchymal cells

leaving a narrow zone of almost clear corium immediately underneath the epidermis The cells are of many types endothelioid cells plasma cells small round cells and neutrophil and eosinophil leucocytes Where there has been much scratching

neutrophil polymorph predominate but here and there will be found areas little affected by secondary inflammatory changes and in them the predominating cell is large rather poorly staining often with a crenated nucleus The epidermis is frequently of normal appearance but acanthosis with elongation and thinning of the inter papillary processes hyperkeratosis and parakeratosis are not uncommon All the above cells are found also in the tumours but with the addition of small giant cells similar to those found in the lymph nodes in lymphadenoma although some experts differentiate them (Fig 214) The essential point in the histological diagnosis of mycosis fungoides is the finding of cells of mesenchymatous origin differing from those found in banal inflammatory processes whether acute or chronic The finding of even one of the characteristic small multinucleated cells gives the diagnosis of reticulosis

In leukaemia cutis there is also a very dense infiltration of the cutis and subcutis with cells coming from the blood lymphoblastic or myeloblastic as the case may be They form obvious deposits from outside the skin itself and have not originated *in situ* They are usually very uniform as opposed to the polymorphism seen in mycosis fungoides and differentiation into recognizable forms such as myelocytes is very rare I personally have only observed it once In lymphadenoma it is rare to find a typical histological picture in the skin but when it does occur the combination of lymphocytes eosinophils endotheloid cells and small multinucleated cells is diagnostic More often biopsy of a lymph node gives the diagnosis

PROGNOSIS

This is always bad Recovery is so exceptional that no hope of it should be encouraged The duration is very variable but few cases of lymphadenoma or mycosis fungoides survive beyond five years and most end fatally in a much shorter time The premycosic phase may last for some years but once tumours have started to form the end is seldom delayed for more than a year or two Occasionally treatment does seem to give long remissions and an initially good general condition of the patient enabling him to stand up to intensive treatment with x rays or a nitrogen mustard is a favourable factor In leukaemia only in the chronic lymphatic form is there much hope of a substantial postponement of the fatal issue but there are cases with lymphoblastic nodes in the skin which last for years without exhibiting leukaemic changes in the blood In acute leukaemia the skin involvement is often terminal or almost so

DIAGNOSIS

In premycosis the diagnostic points are the persistence of the eruption its infiltration the severe itching and the often rather bizarre pattern with curious islands of apparently normal skin lying among the plaques of *peau d orange* Pigmentation is common but not always present A test dose of x rays say 200 r at 100 kilovolts to a patch will often produce such a dramatic improvement as to clinch the diagnosis Biopsy will often be conclusive but the specimen must be chosen and later examined by an expert From psoriasis premycosis may be distinguished by its infiltration and itching and usually in psoriasis there will be quite typical lesions somewhere on the skin surface and perhaps the pathognomonic pitting of the nails The variety of parapsoriasis called by Crocker (1905) xantho-erythrodermia

perstans is usually less scaling and does not itch much, if at all, but cases accepted by experts as xantho erythroderma have proved in the end to be mycosis fungoides Once the tumours have appeared the diagnosis is seldom in doubt, and the main difficulty is with those cases which lack the premycosic phase, when the tumours may be thought to be gummatous Serological and if necessary therapeutic tests will rule out syphilis and biopsy will clinch the diagnosis and also decide between mycosis and sarcoma When there is enlargement of lymph nodes, biopsy of a node preferably not an inguinal one, is indicated Blood examination will usually give the diagnosis in leukaemia cutis, and marrow biopsy in some of those cases with lymphoblastic infiltrations but no lymphaemia In all cases of erythroderma blood and perhaps marrow examinations are desirable It is unusual for biopsy of a tumour or an infiltrated area of skin to yield decisive evidence of the type of leuk aemia To sum up in any case which clinically seems likely to belong to the reticulosis group very full investigation is required Skin and lymph node biopsies and blood and marrow examinations are of particular importance

TREATMENT

Radiotherapy

The principal agency at our disposal in the treatment of this whole group of dis eases is the roentgen ray, and this may be used in several different ways For limited areas the best method is to use at first a very soft radiation say at 50 kilovolts, and give doses of 200 r, which can be repeated several times if necessary at intervals of about a fortnight If the soft rays do not act sufficiently well, the kilovoltage can be raised, and sometimes such hardening of the rays may for a time counteract the tendency for the tumours to become radio resistant Larger tumour masses, and the affected lymph nodes in lymphadenoma and also the spleen and long bones in leukaemia may require even higher kilovoltages and the use of filters When the areas affected are extensive, as in premycosis and the erythrodermias the so-called roentgen shower bath is indicated In this method the whole of the patient s body is exposed to the rays a very small dose being given daily This is easily done by placing the patient at a distance from the x ray tube Thus a tube which at 100 kilovolts and 5 milliamperes is delivering 216 r per minute at 8 inches is delivering 1 5 r per minute at 8 feet or perhaps a little less owing to the slight filtering power of the air When this method is used it is vitally necessary to do daily counts of the blood both red and white cells, and stop whenever the figures drop too low The white cells are the more sensitive indicators and a count of less than 2 000 per cubic millimetre is the signal to stop the treatment If, in spite of precautions it happens that the danger point has been passed transfusions will be required and will usually avert the danger The merits of radio active phosphorus in the control of leukaemia are still under consideration

Administration of nitrogen mustards

Recently, a group of drugs called nitrogen mustards because they are mustard gases in which the sulphur of the original formula has been replaced by nitrogen have attracted much attention as remedies in lymphadenoma They are powerful protoplasmic poisons, and act more on nuclei in mitosis than on resting cells In classical Hodgkin s disease they have given results which seem to be at least equal

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Other methods

As erysipelas has been known to bring about improvement amounting almost to cure fever treatment has been used and particularly artificially inoculated malaria but here again reports are contradictory

Arsenic was much used at one time but I have never been convinced of its value

Benzol and urethane have been used with some success in leukaemia but I have no knowledge of any results in leukaemia cutis

For relief of the itching the following cream may be useful

Menthol	–	– 0 2
Aq Ros	–	– 2 0
Emulsifying base		– 28 0

Ulcerated areas may be dressed with Tulle Gras and penicillin cream locally or penicillin parenterally may combat secondary sepsis

PART II

KAPOSI S IDIOPATHIC MULTIPLE PIGMENTED SARCOMA

In 1869 Kaposi recorded two peculiar cases which had come under his notice and as part of his contribution to Hebra s famous text book he described five cases in all So little has been added to our knowledge of this disease since then that I feel that I can do no better than quote part of his summary (Kaposi 1875)

> Without any known general or local cause nodules as large as pigeon shot peas or hazel nuts and of a bluish or brownish red colour become developed in the skin Their surface is smooth their consistence firm and elastic sometimes they are expansile like an erectile tumour They are isolated and when increased in size appear as globular prominences Or they form groups and then remain more flattened In the latter case the central nodules of the plaque undergo involution and give rise to a dark pigmented depression They always occur first on the sole and dorsum of the foot and soon afterwards on the hand They develop most abundantly on these parts and are associated with a diffuse thickening of the skin and deformity of the hands and feet In the further course of the disease nodules which are either isolated or arranged in groups occur also on the arms legs and face but they are always fewer in number and irregularly distributed The nodules may in part undergo atrophy and involution It would appear that they become ulcerated at a late period only or more

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correctly speaking the part which they occupy becomes gangrenous The lymphatic glands do not become materially swollen Finally similar nodules become developed in the mucous membrane of the larynx trachea stomach intestines and liver but most abundantly throughout the large intestine as far as the anus The disease always terminates fatally within two or three years

The tumours are tender, and give rise to a feeling of tension in hands and feet Most recorded cases have occurred in the Semitic races, but there have been occasional instances in other races, including British Since Kaposi s time it has become established that comparatively mild and benign cases occur in which the patient remains in good general health for years and may even recover

Aetiology

The causation of the condition is quite unknown The occasional cases of recovery are against its being a reticulosis

Histopathology

In the early stages the nodes consist of spindle cells very like sarcoma, but for the fact that the large and numerous blood sinuses have endothelial linings Haemorrhages and deposits of blood pigment are common Later areas of granulation tissue and of necrosis are seen Pautrier and Diss (1929) describe what they think to be cells derived from the sheath of Schwann and also collections of neuro muscular cells, such as are described by Masson in the glomus tumour In their opinion Kaposi s sarcoma bears the same relationship to the neuro vascular system as does von Recklinghausen s multiple neurofibromatosis to the sensory nerves

Differential diagnosis

The differentiation of this condition from true malignant melanoma is by histological examination The colour of the tumour or tumours may be very suggestive of one rather than of the other, but is seldom conclusive The race of the patient comes into consideration Lepra and leukaemide have to be excluded, and this is done by microscopical examination

Treatment

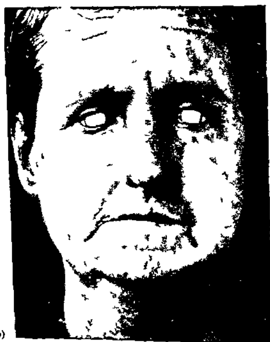
X rays in doses of 200–300 r at 120 kilovolts unfiltered or with light aluminium filtration if lower kilovoltages are used will often cause lesions to disappear and it may be possible to keep the skin clear indefinitely Little can be done for visceral involvement, although arsenic in very full doses has been used since Kaposi s time with occasional apparent success

Prognosis

The prognosis is bad in the long run but the course may be prolonged for years with the patient in fair general health treatment may bring about local cure and complete recovery is not impossible



(*a*)



(*b*)

FIG 15 —Progressive or diffuse symmetrical sclerodermia (acrosclerosis) (*a*) sclerodactyly of the hands and (*b*) face of same patient note numerous vascular tufts all over the face

CHAPTER 33

THE SCLERODERMIAS

PART I

GENERAL FEATURES

G B DOWLING

CLASSIFICATION

IN THE group of sclerodermias there are four clinical pictures each of which differs more or less distinctly from the others The term scleroderma therefore always requires qualification The four types are named progressive symmetrical scleroderma generalized scleroderma circumscribed scleroderma or morphoea and guttate scleroderma or guttate morphoea or white spot disease They have in common one factor—a change in the connective tissue that makes the skin feel hard

There may not appear to be a great deal of difference in the terms progressive symmetrical scleroderma and generalized scleroderma, but the difference in fact is striking and for the former the relatively new term acrosclerosis (Sellei) is now commonly employed Similarly the terms morphoea and guttate morphoea imply only a difference in the size of the lesions but there are also differences in sex incidence in distribution and histology For these reasons no doubt an old term lichen sclerosus which may or may not have been applied originally to guttate scleroderma, is now almost universally used for it It is hardly likely that these varieties of scleroderma are unrelated but as nothing is known about the aetiology of any of them they can only be discussed at the present time as separate clinical and pathological pictures

PROGRESSIVE SYMMETRICAL SCLERODERMIA

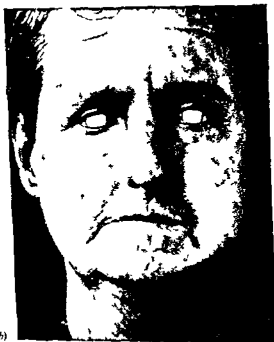
Progressive symmetrical scleroderma (acrosclerosis (Sellei) or generalized systemic sclerosis (Goetz)) produces widespread changes throughout the body but except for considerable variations in severity the clinical and pathological pictures are remarkably constant

Clinical and pathological pictures

It begins often with Raynaud s phenomenon and this may precede further developments by months or even years In due course progressive hardening of the skin of the fingers (sclerodactyly Fig 215 (a)) develops in addition to a special kind of facial immobility, the sclerodermatous mask sometimes preceded by oedematous swelling over the cheek bones The lips are thin tight and furrowed the nose is pinched and here and there on the face and nose are small telangiectatic tufts (Fig 215 (b))



(a)



(b)

FIG 215 —Progressive or diffuse symmetrical sclerodermia (acrosclerosis) (a) sclerodactyly of the hands and (b) face of same patient note numerous vascular tufts all over the face

At the same time the process can often be seen to be developing on the neck, the upper part of the chest and back, the forearms and arms usually along the extensor aspect in the form of a band but sometimes involving the whole of the skin of the upper limb The lower part of the back and the abdomen are often similarly affected and sometimes the feet and lower limbs are affected in much the same manner as the upper limbs, though often they are spared altogether All affected parts may be oedematous at first, even grossly oedematous, so that the patient s first complaint may be of swelling of the limbs and face and occasionally of generalized oedema when this has subsided the skin becomes more or less hard and cannot be pinched up with normal ease it may be brown or a rather dull ivory tint but in a slanting light the surface often exhibits a porcelain lustre Sclerosis is rarely dense enough to interfere with movement except of the fingers which in a well developed case cannot be fully extended, and it may be quite superficial

The skeletal muscles are also affected in a special way and to a very variable degree Some muscular fatigue is present fairly constantly, though sometimes patients make no special complaint of it this can be elicited most easily by testing quadriceps strength by making the patient get up from the floor or a low chair it may be extremely severe and in such cases squint nasal speech dysphagia and finally, difficulty in breathing due to intercostal weakness, may occur

The main clinical features of progressive scleroderma are thus Raynaud s phenomenon and telangiectases on the face scleroderma and skeletal myopathy There are however many additional changes the deposition of calcium in the sclerodermatous skin and subcutaneous tissue most often of the hands and osteo porosis—usually localized and occasionally diffuse—are not uncommon in old cases Two kinds of dysphagia occur, one which may occur early, at the upper end of the oesophagus due to involvement of the striped muscle of the oesophagus the other is a later development at the lower end and is due to constriction just above the cardia This well known lesion has been closely examined by Goetz (1945) who found in the constricted area an acellular thickening of the submucosa with marked inflammatory infiltration hypertrophy of the muscularis mucosae and degeneration of the transverse and longitudinal muscular coats Similar lesions have been met with in other parts of the alimentary canal notably ballooning of the duodenum with constriction at its jejunal end and narrowing of various parts of the colon with sacculation above the constricted portion which may be no larger than a fair sized appendix The heart muscle is involved in the process but appears to suffer far less than the skeletal muscles and heart failure due to scleroderma though not unknown is rare

The kidneys are not often functionally damaged but marked changes have been found microscopically in the renal vessels The thyroid in long standing cases becomes fibrous and much reduced in size but functionally does not appear to suffer Diffuse fibrosis of the lungs radiologically demonstrable is sometimes found The blood vessels particularly the smaller branches of every tissue may suffer damage the predominant changes being intimal thickening which in some vessels consists of acellular fibrinoid or mucinous material and fibrous replace ment of the muscle coats All these pathological changes have been described and illustrated in great detail by Goetz and doubtless the picture is not yet completely known

It is impossible to think of such a process without assuming the existence of some single common factor this it may be supposed is to be found in the change suffered by the skin Supposing diffuse scleroderma to be a disease affecting connective tissue throughout the body it can be readily seen that its effects would vary according to the tissues affected the blood vessels the skeletal and plain muscle and the heart The skeletal muscles and other tissues bear the brunt of the disease in many of the cases that progress to a fatal ending for the skin is not often hide bound and only the movements of the fingers are commonly impeded For this reason Goetz (1945) has proposed a change in nomenclature and suggests that of generalized systemic sclerosis rather than progressive symmetrical scleroderma or acrosclerosis both of which fail to take note of the effect of the process on the whole organism It is possible however that sclerosis may not be the most suitable term for hardening is a prominent feature only in the skin Furthermore in dermatomyositis which is another aspect of the same process clinical hardening even of the skin may be absent

Course and prognosis

This varies greatly in an unknown proportion of cases the disease process comes to an end and the patient recovers except for residual damage loss of tissue at the ends of the fingers slight permanent sclerodactyly slight hardening of the skin in the sites of election and the sclerodermatous mask which does not often disappear altogether Relatively severe cases on the other hand are steadily progressive for many years The prognosis is usually bad when severe muscular weakness is present at an early stage such symptoms as relatively early dysphagia and nasal speech being of serious significance The disease often terminates with death from broncho pneumonia

GENERALIZED SCLERODERMIA

In this variety there is no distinct pattern as in acrosclerosis and Raynaud s phenomenon is not met with as an initial symptom The process affects the trunk predominantly and may be preceded by gross oedema of hard consistence The distribution varies and may be partial or almost universal The degree of hardening of the skin may be severe and the movements of the limbs and chest seriously impeded The disease develops fairly rapidly and may proceed to a fatal termination after some months or after several months it may become stationary Eventually the oedema and hardening subside gradually and the skin though sclerosed becomes less rigid Final recovery is not exceptional There is no sclerodactyly and although the face may be attacked the characteristic pinched mask and facial telangiectases do not develop Muscular weakness may be pronounced and gross creatinuria is found in severe and widespread cases Thus the two varieties of diffuse scleroderma have much in common but why the special pattern so strongly defined in acrosclerosis should be absent in the other diffuse form is unknown

CIRCUMSCRIBED SCLERODERMIA OR MORPHOEA

Morphoea may occur in a variety of shapes and sizes in bands in irregular patches or in small curved streaks shaped like a sabre and the lesions may be single or multiple The distribution of these lesions follows no regular pattern and

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This varies greatly in an unknown proportion of cases the disease process comes to an end and the patient recovers except for *residual damage* loss of tissue at the ends of the fingers slight permanent sclerodactyly slight hardening of the skin in the sites of election and the sclerodermatous mask which does not often disappear altogether Relatively severe cases on the other hand *are steadily progressive for many years* The prognosis is usually bad when severe muscular weakness is present at an early stage such symptoms as relatively early dysphagia and nasal speech being of serious significance The disease often terminates with death from broncho-pneumonia

GENERALIZED SCLERODERMIA

In this variety there is no distinct pattern as in *acrosclerosis* and Raynaud s phenomenon is not met with as an *initial symptom* The process affects the trunk predominantly and may be *preceded by gross* oedema of hard consistence The distribution varies and *may be partial* or almost universal The degree of *hardening* of the skin may be severe and the movements of the limbs and chest seriously impeded The disease develops fairly *rapidly* and may proceed to a fatal termination after some months or after several months it may become stationary Eventually the oedema and *hardening* subside *gradually and the skin* though sclerosed becomes less rigid Final recovery *is not exceptional* There is no sclerodactyly and although the face may be *attacked* the characteristic pinched mask and facial telangiectases do not develop Muscular weakness may be pronounced and *gross* creatinuria is found *in* severe and widespread cases Thus the two varieties of diffuse scleroderma have much in common *but* why the special pattern so strongly defined in acrosclerosis should be *absent in* the other diffuse form is unknown

CIRCUMSCRIBED SCLERODERMIA OR MORPHOEA

Morphoea *may occur in* a variety *of shapes* and sizes in bands in irregular patches or in small curved *streaks shaped* like a sabre and the lesions may be single or multiple The distribution of *these* lesions follows no regular *pattern* and

any part may be attacked Occasionally a number of patches appear to have a zonal distribution, but they are usually found not to correspond accurately with a spinal segment (Fig 216) The sabre like lesion is found most often on the scalp or on the face rarely on the lip and buccal mucosa or the vulva, on the limbs the band form is most often met with On and beneath the breasts (Fig 217) morphoea



FIG 216—Morphoea child aged 3½ years Note zone like distribution of two of the three patches



FIG 217—Morphoea right breast

may produce a hardening comparable to cancer *en cuirasse* sparing the nipples which protrude through a hard surrounding ring of sclerodermatous skin Morphoea may involve very large areas it may even be almost universal The initial lesion is an area of localized erythema and oedematous swelling and recognizable sclerodermia may not appear for some weeks when the central part of the area becomes hard and develops an ivory tint and often a glistening white porcelain lustre When the lesion is actively spreading there is always at its periphery a zone of cyanotic erythema the lilac zone Patients complain sometimes of pain in the area of extension

It is impossible to draw any hard and fast line of demarcation between generalized sclerodermia and morphoea in patches and areas so widespread as to cover a considerable part of the surface In widespread morphoea also there is sometimes a relatively mild degree of generalized muscular weakness and a pathological degree of creatinuria In certain cases also localized muscular atrophy is found in the region of the affected skin It would appear then that morphoea and generalized sclerodermia probably are localized and generalized manifestations of the same process

Prognosis

The prognosis in morphoea cannot be predicted but in a proportion of cases the skin becomes normal in the course of time although rarely in less than a year or two The sabre form lesions show little tendency to recovery whereas in widespread areas the outlook is more favourable Life is never endangered by morphoea and apart from occasional muscular fatigue in extensive cases the general health of the patient is not greatly impaired

GUTTATE SCLERODERMIA

This variety of sclerodermia differs both clinically and histologically from the preceding types in so striking a fashion that there has been for a number of years a strong body of opinion which supports the view that it is an entirely separate disease It is seen chiefly in adult women of any age very rarely in female children It has well marked sites of predilection namely the nape of the neck and upper part of the chest and back the intermammary and submammary areas the sacrum and lumbar area and the perianal and perigenital region The lesions are guttate spots which feel like parchment exhibit a mother of pearl or porcelain lustre and are surrounded at the time of their appearance by a thin red or lilac erythematous border They are mainly discrete but may coalesce to form patches of various dimensions The follicular pores are invariably patulous and they are plugged with horn In the confluent lesions the epidermis is often wrinkled and loosely attached to the underlying cutis and exceptionally is lifted up from it by fluid In the perianal and genital region the condition has been confused with both lichen planus and leucoplakia vulvalis

In these days the condition described above is generally named lichen sclerosus et atrophicans a term applied by Hallopeau and Darier in 1887 to what they apparently regarded as a special type of lichen planus Darier (1928) named the condition *lichen planus sclerosus et atrophicans* and in his description of it he says it occurs in both sexes occupying any part of the body but notably the nape

any part may be attacked Occasionally a number of patches appear to have a zonal distribution, but they are usually found not to correspond accurately with a spinal segment (Fig 216) The sabre like lesion is found most often on the scalp or on the face, rarely on the lip and buccal mucosa or the vulva on the limbs the band form is most often met with On and beneath the breasts (Fig 217) morphoea

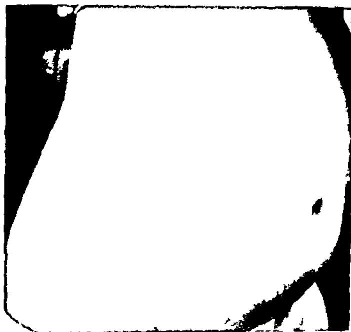


Fig 216—Morphoea child aged 3½ years Note zone like distribution of two of the three patches



Fig 217—Morphoea right breast

acrosclerosis it may eventually pursue an indolent progressive course it may equally come to an end within a relatively short period or it may prove rapidly fatal It is very occasionally preceded by Raynaud s phenomenon for a few months but it begins more often with oedema sometimes widespread and erythema of the face hands and arms The colour changes in the skin made up chiefly of erythema and telangiectases are similar to those of lupus erythematosus and at first it may be impossible to distinguish one disease from the other Eventually a certain degree of sclerosis is likely to develop and on the fingers and hands especially an underlying whiteness is seen which is characteristic of scleroderma There is also a rather striking distribution of the erythema in bands along the dorsal aspect of the areas over the metacarpal bones and the fingers (Fig 218) conforming thus to the usual pattern of acrosclerosis The muscular phenomena of dermatomyositis are exactly those of acrosclerosis though usually more severe and acute and the main difference between the two processes is that of speed There are intermediate cases in which it is not always easy to decide whether the case should be labelled dermatomyositis or acrosclerosis but as far as the skin is concerned there is never a transition during the course of the disease however prolonged from the characteristic variegated picture of dermatomyositis to that of pure scleroderma or *vice versa*

Sclerema neonatorum

Both scleroderma and dermatomyositis have occurred in infancy There are two rare diseases of infancy which are unrelated to scleroderma but might be confused with it namely acute sclerema or preagonal induration of the cellular adipose tissue and fat sclerema The two are not related aetiologically

Acute sclerema

Acute sclerema may begin at any time in the first 6 months of life occurring always in premature or marasmic infants or in those who are wasting from a severe dehydrating illness especially infantile gastro-enteritis A progressive induration of the subcutaneous tissue takes place which by degrees involves the whole surface with the exception of the penis scrotum palms and soles The skin is waxy yellowish white or blue in colour Respiration is impeded sucking becomes impossible and rapid wasting and death follow in the course of days Goldsmith (1936) remarks that the fat of infants contains slightly less olein than adult fat has ordinarily a slightly higher melting point and that a drop in temperature occurring in a wasting illness may be enough to cause it to solidify

Fat sclerema

Fat sclerema occurs in full time infants of healthy appearance and always within the first few days or week of birth The condition consists of isolated hard thickenings of the subcutaneous fat of irregular shape and size the parts chiefly affected are the cheeks shoulders thighs buttocks and calves The solidified fat is found to be made up of fat and acicular crystals There is an active reaction to the altered fat in the form of inflammatory cells giant cells and new fibrous tissue

Fat sclerema may or may not be associated with illness or loss of weight or be complicated by diarrhoea A drop in temperature seems however to play no part as it does in the case of acute sclerema It may be fatal or recovery may take place

of the neck and the wrists in the same chapter he describes as guttate morphoea precisely the condition which *is now popularly* known as lichen sclerosus with its very characteristic sex *incidence* and distribution Civatte (1947) believes that lichen sclerosus is identical with guttate morphoea and that it should be classed as a variety *of scleroderma* This view is strongly supported in his opinion by the fact that the association of the characteristic perigenital and perianal lesions of this condition with morphoea *in patches or bands is* not unknown

DIFFERENTIAL DIAGNOSIS OF THE SCLERODERMIAS

Scleroedema adultorum of Buschke

This extremely rare condition attacks young adults, beginning acutely with oedema usually of the upper part of the trunk, the neck and the face The whole of the body may be involved impeding movement, the hands are spared The *oedema is solid* and does not pit on pressure After a variable period usually from *12 to 18 months, the* disease comes to an end *leaving no trace of its former presence* It will be seen that it must be quite impossible to distinguish this condition from *the earlier stage* of what has been described as generalized scleroderma It would indeed seem not improbable that the two are variations of the same pathological process

Dermatomyositis

This disease follows accurately the pattern of acrosclerosis both in its distribution *and in its effects on the organism as a whole It is however,* generally speaking a more acute process and is often febrile in its earlier stage, but like



FIG 218—Dermatomyositis Note disposition of variegated cutaneous change on hands along the metacarpals and fingers and muscular wasting of the first interosseous space

acrosclerosis it may eventually pursue an indolent progressive course it may equally come to an end within a relatively short period or it may prove rapidly fatal It is very occasionally preceded by Raynaud s phenomenon for a few month but it begins more often with *oedema* sometimes widespread and erythema of the face hands and arms The colour-changes in the skin made up chiefly of erythema and telangiectases are similar to those of lupus erythematosus and at first it may be impossible to distinguish one disease from the other Eventually a certain degree of sclerosis is likely to develop and on the fingers and hands especially an underlying whiteness is seen which is characteristic of scleroderma There is also a rather striking distribution of the erythema in bands along the dorsal aspect of the areas over the metacarpal bones and the fingers (Fig 218) conforming thus to the usual pattern of acrosclerosis The muscular phenomena of dermatomyositis are exactly those of acrosclerosis though usually more severe and acute and the main difference between the two processes is that of speed There are intermediate cases in which it is not always easy to decide whether the case should be labelled dermatomyositis or acrosclerosis but as far as the skin is concerned there is never a transition during the course of the disease however prolonged from the characteristic variegated picture of dermatomyositis to that of pure scleroderma or *vice versa*

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Hypostatic sclerosis

A progressive hardening of the skin and subcutaneous tissue of the lower third or half of the legs is often seen in heavy subjects of both sexes from middle age onwards and is usually, though not necessarily, associated with the presence of varicose veins The constricted part of the leg is often the seat of ulceration or of eczema The hardening is due to progressive fibrosis and is not related in any way to scleroderma

TREATMENT

The sclerodermias have been subjected to a great variety of remedies and it has been claimed that some of them have achieved some degree of success for example vitamin D in heavy doses (Cornbleet and Struck 1937) and vitamin E in doses up to 300 milligrams a day have been employed in recent years as the result of favourable reports made independently by Petráček (1948) of Prague and by Burgess (1948) of Montreal In the author s experience neither of the above vitamins has however appeared to have any noticeable effect on scleroderma The same may be said of thyroid oestrogens and androgenic drugs though Goldsmith (1936) noticed a considerable reduction in the output of creatine in two patients whom he treated with testosterone It must be accepted that at present there is no known remedy for any type in the group Local remedies have also failed to make any remarkable impression on the process Cases of severe scleroderma need careful management in their progressive stage rest and often nursing being the chief requirement In slowly progressive chronic cases the patients should restrict physical effort to not more than can be accomplished without fatigue

PART II

HISTOLOGY

I W WHIMSTER

THE principal cutaneous histological changes in the scleroderma group of diseases concern the connective tissues of the dermis and though the site and severity of the changes may vary and so give rise to differing clinical pictures the basic sclerosing process is common to all types This process may affect the upper third of the dermis the lower two thirds or, less often the whole thickness of the dermis

It is possible that the differences in behaviour of the upper third compared with the lower two thirds of the dermis in this condition are related to the normally more delicate collagen network of the superficial zone compared with the coarser structure of the deeper part In both the superficial and deep types the course of events is similar the first demonstrable change being the appearance of oedema and an inflammatory infiltrate of lymphocytes This stage lasts for a variable period and then as the oedema and inflammation subside the collagen undergoes sclerosis and concurrently any epithelial structures in contact with it atrophy

The superficial type of sclerosis

This starts with a fairly intense infiltration of the papillary layer by lymphocytes and the appearance within this area of patches of oedematous acellular collagen

having a smeary mucoid appearance These patches enlarge and coalesce so as ultimately to occupy the whole of the superficial third of the dermis and at the same time the lymphocytes become concentrated into a sharply demarcated

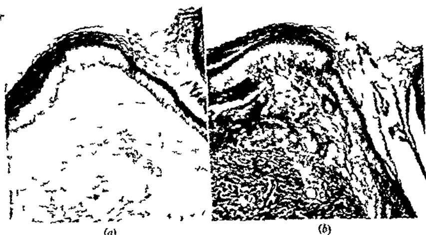


Fig 219 —Guttate morphoea Perifollicular lesion showing the oedematous inflammatory stage of the superficial type of sclerosis From the abdomen of a woman aged 72 *Stained by (a) haematoxylin-eosin and (b) van Gieson method*

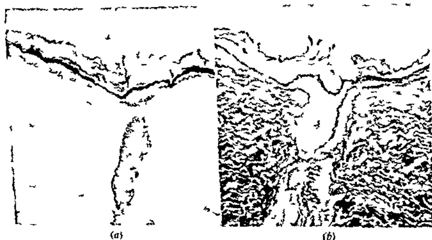


Fig 220 —Guttate morphoea Perifollicular lesion in a later stage than in Fig 219 when the oedema and inflammatory reaction have subsided and a mild degree of sclerosis has appeared Submammary lesion from a woman aged 51 Stained by (a) haematoxylin eosin and (b) van Gieson method

band which separates the abnormal from the deeper normal collagen The elastic tissue in the oedematous area largely or completely disappears *The epidermis* becomes thinned the rete pegs disappear and the cells of the basal layer show

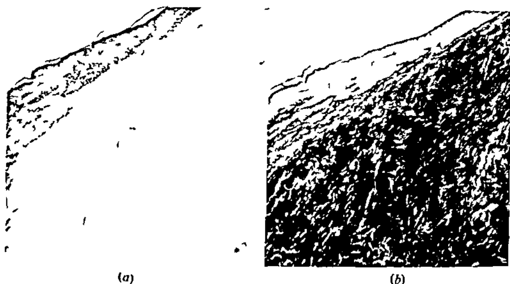


Fig 221 —Guttate morphoea Section from the edge of a plaque of confluent lesions showing severe superficial sclerosis and the persisting marginal inflammatory infiltrate Submammary lesions from a woman aged 61 Stained by (*a*) haematoxylin eosin and (*b*) van Gieson method

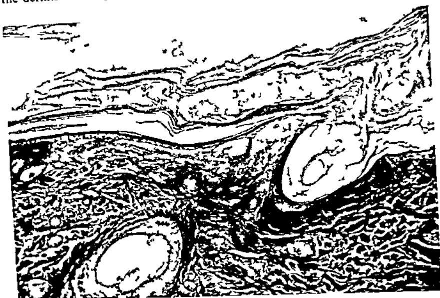


Fig 222 —Localized morphoea Section from a plaque on the upper arm of a woman aged 59 showing the normal epidermis and upper third of the dermis and the coarse densely packed collagen bundles of the lower two thirds (van Gieson stain)



Fig 223 —Dermatomyositis Section of voluntary muscle showing severe degeneration of muscle fibres proliferation of sarcolemma cells and a small perivascular focus of lymphocytes From a fatal case in a male aged 64 Haematoxylin eosin method of staining

an abnormal degree of vacuolation but surprisingly an excess of well formed horn is produced In sections the epidermis usually appears to be very loosely attached to the dermis and in places comes right away from it When this type of change



(a)



(b)

Fi ..4 —Section from the scalp of a case of dermatomyositis (same case as Fig 223) showing the early perifollicular oedematous stage of the superficial type of sclerosis (a) haematoxyl n-eosin method of staining and (b) van Gieson staining

occurs in hairy skin it most frequently starts round the mouths of follicles, these, like the surface epidermis atrophy and become dilated and plugged with horn (Fig 219) Later when the oedema and inflammatory reaction have subsided the normal pattern of the upper third of the dermis is seen to be replaced by an acellular dense mass of fine mostly horizontal fibres The epidermis remains thin flat and hyperkeratotic (Figs 220 and 221)

The deep type of sclerosis

In this type of sclerosis the initial change is similarly oedema and lymphocytic infiltration though both these factors are less marked than in the superficial type In its pure form the changes are wholly within the lower two thirds of the dermis The oedema and inflammation are confined to the advancing edge of the lesion, while in the more central older part the collagen bundles become thickened closely packed and the majority of them run horizontally These thickened bundles often but not invariably stain an orange colour with van Gieson s stain As the tissue scleroses it becomes relatively acellular and any *epithelial structures it contains atrophy and disappear The pilar muscles* however persist and the upper third of the dermis and the epidermis remain normal (Fig 222)

The lesions of guttate scleroderma are of the pure superficial type and the plaques of localized morphoea usually of the pure deep type In generalized scleroderma sclerodactyly and dermatomyositis the two types of change may occur in the same patient either together or separately in different lesions

The erythematous reaction which precedes the sclerosing process in dermatomyositis is histologically non specific The affected muscles in dermatomyositis and generalized scleroderma show degeneration of the muscle fibres which may be of extreme severity proliferation of the sarcolemma cells and scattered perivascular accumulations of lymphocytes (Figs 223 and 224)

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CHAPTER 34

SKIN DISEASES OF WARM CLIMATES AND CUTANEOUS MANIFESTATIONS OF MALNUTRITION

L J A LOEWENTHAL

PARASITIC DERMATOSES

DESPITE the large number of dermatoses which have been described as peculiar to or especially prevalent in the tropics the practitioner will find that the majority of his dermatological patients are suffering from one or more of the common skin diseases of temperate zones These may be easily recognizable or they may be so modified by climate and race as to require some skill in their diagnosis In any case the practitioner will find that treatment must often be adapted to suit the climatic conditions which obtain and that attention to nutrition and the eradication of tropical diseases such as malaria may be of great assistance

The effects of climate on the skin may be subdivided into (1) the effects of heat and humidity (2) the effects of strong sunlight and (3) the effects of malnutrition chronic debilitating disease poor hygiene and native customs

The effects of heat and humidity

Prolonged sweating has been shown to affect the skin deleteriously in several ways prickly heat is an obvious example but many indirect changes are also attributable to undue perspiration If sweating is excessive the *p*H of the sweat rises and this alkalinity readily produces maceration of the stratum corneum Friction of this stratum either against clothing or from intertrigo then produces minute breaches of the surface which in turn encourage the entrance and growth of bacteria and fungi

Burtenshaw (1945) has summarized convincing evidence to show that fatty acids normally present in sebum and sweat play a great part in the self sterilization of the skin under conditions of excessive sweating this protective acid mantle tends to be neutralized and thus pathogenic bacteria are given a more favourable environment

Such mechanisms are probably sufficient to account for the prevalence of severe impetigo often of the bullous type located on the body ecthymatous sores severe generalized forms of seborrhoeic dermatitis infections of the skin with *Coryne bacterium diphtheriae* and *Pseudomonas pyocyanea* and the florid appearance of numerous superficial fungus infections

Effects of strong sunlight

Persons of European stock who live in the tropics and subtropics are prone to develop a series of skin changes often ending in malignancy which have been

described under various names such as farmer's skin sailor's skin and so on Though brunettes can be affected the great proportion of such sufferers comprises people of blond or intermediate colouring acclimatization plays no part for persons are frequently seen for instance among South Africans whose ancestors have lived under conditions of excessive sunlight for *many generations* Dryness of the skin is an additional factor this is almost synonymous with fair colouring for the oiliness of the skin usually increases with its degree of pigmentation but even in the group of blonds there are marked differences It is among those who have the tendency to ichthyosis that the most pronounced changes from solar damage are found

The final appearance produced by intolerance to sunlight in Europeans comprises atrophy patchy pigmentation telangiectasia warty growths and eventually epithelioma usually of the basal cell but sometimes of the squamous-cell type It will be noted that the cutaneous degeneration described is similar to that produced by *another form of radiant energy—roentgen irradiation In a special form* the atrophic skin tends to wrinkle and deep furrows appear this appearance is frequently seen on the necks of outdoor workers even in temperate regions

Colloid degeneration of the skin has been noted in such countries as Australia South Africa and Palestine and the prevalence of pseudo-colloid milia in tropical and subtropical countries is far greater than in Europe Again *the blond skin is* particularly susceptible and the condition limited to exposed areas Berlin (1946) has described these changes meticulously and has also drawn attention to the purpura and bleeding after mild trauma which occur in advanced cases

Comparative statistics of the incidence of all the above conditions are not obtainable but experience shows that they occupy a disproportionate share among *the* dermatoses seen in practice among Europeans Various estimates for example have placed the incidence of rodent ulcer in warm climates as high as twenty times that seen in Europe among people of the same racial stock

Among other dermatoses probably precipitated by excessive sunlight and consequently more often seen among the white inhabitants of warm climates are lupus erythematosus of the subacute and chronic forms and various types of sensitivity *where sunlight acts in conjunction with internal or external changes Among* the latter are the cases which Klaber (1942) aptly termed phyto photo dermatitis in these various vegetable substances such as members of the wild parsnip family certain citrus fruits and bergamot sensitize the skin lesions are *produced only* after exposure to sunlight Other conditions such as prurigo aestivalis are probably more severe though not more frequent in tropical regions

In one respect sunlight appears to be beneficial although tuberculosis is rife among many races living in the tropics the incidence of active cutaneous forms such as lupus vulgaris is low This is in direct contrast *with the incidence reported* in the Negro population of the temperate regions of the United States of America *(Hazen 1914)*

It is surprising to find that psoriasis is common among Europeans living in hot climates In spite of the beneficial effects of sunlight the writer has found it to be one of the common dermatoses seen in South Africa and during *World War II* he in common with other dermatologists in the Middle East saw many British soldiers

whose psoriasis became worse as well as others who developed this disease in a severe form for the first time This peculiar observation cannot be entirely attributed to the effects of heat and inadequate facilities for washing

The effects of malnutrition chronic debilitating disease poor hygiene and native customs

The reader must always bear in mind that most indigenous tropical populations are living in a state of malnutrition In addition to economic causes and ignorance the high incidence of such diseases as malaria helminthiasis and amoebiasis reflects on the working capacity and hence the crop returns of such peasants This in its turn leads to a state of under nourishment and completes the vicious circle There is some evidence also that many food stuffs produced in the tropics are deficient in certain essential food factors An instructive experience is to compare the skins of inmates of a prison or camp for indentured labour with those of the free population The oily smooth skin of the former when given an adequate diet contrasts in a startling way with the dry dull harsh skin which one is accustomed to see among the peasant classes A consideration of individual dermatoses attributed to the various deficiencies is given later in this chapter It will be readily appreciated that inadequate water supplies and the absence of soap also play a large part in the aetiology of numerous dermatoses

Local customs may affect the skin either through the prohibition of certain valuable supplementary foods or by direct ill treatment as when a cow dung plaster is applied to an abrasion picturesque examples include kangri burn cancer and the appearance of a syphilitic gumma on the forehead in devout Mohammedans who regularly traumatize this part on the praying carpet

There are many reports of dermatoses caused by various tropical plants and noxious animals In the first group are numerous examples of eruptions resembling the familiar poison ivy or primula dermatitis indeed a proportion is caused by species of rhus other than poison ivy (*Rhus toxicondendron*) which are used in the manufacture of Japanese lacquer Among animal irritants may be mentioned various spiders ticks mites and caterpillars which can produce irritating papular vesicular or bulbous lesions To enumerate all these potential irritants is outside the scope of this work which indeed would have to be enlarged considerably to include them all

THE NEGRO SKIN

The anatomy and physiology of the skin of the Negro the subject of study by various authors have been summarized by the writer (1937)

The principal differences between the skin of the Negro and that of the European consist of the relative excess in the former of sweat and sebaceous glands the peculiar characteristics of the hair and the degree of pigmentation The intensity of this pigment varies on different parts of the body and can be further changed by the state of tension of the skin stretching for example over the joints tends to lighten the tint while excessive laxity of the skin produces apparent darkening It is important to know which areas are normally less pigmented ignorance of these has actually led to a diagnosis of leprosy in cases where the contrast is well marked

described under various names such as farmer s skin sailor s skin and so on Though brunettes can be affected the great proportion of such sufferers comprises people of blond or intermediate colouring acclimatization plays no part for persons are frequently seen for instance among South Africans whose ancestors have lived under conditions of excessive sunlight for many generations Dryness of the skin is an additional factor this is almost synonymous with fair colouring for the oiliness of the skin usually increases with its degree of pigmentation but even in the group of blonds there are marked differences It is among those who have the tendency to ichthyosis that the most pronounced changes from solar damage are found

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practitioner Once seen the discrete jet black shiny flat topped papules are unmistakable (*see* Fig 225) Leg ulcers associated with sickle-cell anaemia are also probably confined to those of Negro extraction

A common condition almost exclusively seen in the Negro races appears in adult males who shave owing to the tendency of the beard hairs to form tight spirals the cut ends frequently grow back and penetrate the skin from outside They act as foreign bodies and usually become the nucleus of a papule or pustule On close examination both ends of the offending hair are seen to enter the skin if the hair is then dislodged with the point of a needle the free distal end is seen to emerge from the inflamed area while the proximal end remains attached to an apparently normal hair follicle When this condition has persisted for years the beard area becomes pitted with scars between which one sees the indolent papulo-pustular lesions The appearance is easily mistaken for a true folliculitis or in severe cases sycosis Pinkus (1943) has aptly named the condition chronic scarring *pseudo folliculitis of the Negro beard* The only satisfactory treatment is to disengage trapped hairs and allow the beard to grow

Immunity to certain diseases

In contrast with the above predispositions the Negro is relatively immune to certain diseases trauma from light appears almost only in albinos and pellagrins there is an apparent resistance to external irritants and comparative freedom from occupational dermatoses prickly heat seborrhoeic dermatitis psoriasis and rosacea are all rare and alopecia areata is apparently unknown among primitive African tribes though it occurs in the urbanized Negro Epithelioma is rare as would be expected in a race which is immune from light trauma but malignant melanoma contrary to former belief appears to occur as frequently as in the white races

CARE OF THE SKIN IN HOT CLIMATES

From the foregoing remarks it becomes apparent that the special risks incident to the white skin in hot climates call for special prophylaxis This may now be considered in two parts

Prevention of cutaneous pyogenic and fungus infections

Avoidance of unnecessary copious sweating with its consequent shift of the surface reaction towards alkalinity is of importance Suitable clothing preferably of a porous texture and admitting a free flow of air beneath it can usually be obtained Violent exercise during the heat of the day followed by copious draughts of liquids is to be deprecated as being liable to induce a sudden profuse sweat Immoderate bathing, and especially the excessive use of soap also tend to neutralize the acid mantle of the skin and are likewise to be avoided

Fungus infections are today avoidable in the majority of cases the introduction of dusting powders containing propionic caprylic or undecylenic acids and their salts having marked a great advance in prophylaxis Such powders are now manufactured commercially but can also be prepared by using for example 10–20 per cent of sodium propionate or 2 per cent of undecylenic acid with 20 per cent of zinc

The following are the lighter areas of the skin, on the face the supra orbital ridge, the upper eyelid the malar prominence and the tip of the nose, on the trunk a pale streak is distributed horizontally from shoulder to shoulder over the clavicles and meets a similar streak which extends in the midline to the epigastrium, on the back a pale area sometimes stretches down the spine and may spread downwards and outwards over the buttocks The palms and soles are usually almost white and these areas are sharply demarcated

The darkest parts are the nipples genitalia back of the neck and lower parts of the belly

Racial predisposition to certain dermatoses

The Negro skin is particularly prone to fibrosis, as for instance in the formation of keloid The condition known as ainhum a spontaneous constriction of the little toe by a band of fibrous tissue may be a manifestation of this diathesis in conjunction with an underlying nutritional disturbance



FIG 225 – Dermatosis papulosa nigra South African Negro

Lichenoid lesions occur with great frequency and it seems as though this is a common type of reaction to many different stimuli Lichenification too, supervenes with great rapidity in chronic itching dermatoses of the Negro and may cover large areas of the body to such an extent that the term alligator skin is not so fanciful as it may seem

The naevoid condition of the face dermatosis papulosa nigra, is very frequently seen in Negroes and those of mixed blood and is apt to confuse the inexperienced

It will thus be appreciated that both in prevention and treatment the skin should be kept as dry as possible with free access of air that alkalinity and friction are to be avoided and that contact with potential sensitizers which include almost every known surface antiseptic is to be kept to an absolute minimum

CUTANEOUS MYIASIS

Mode of infection

The condition results from the invasion of healthy or diseased skin by various Diptera Certain of these flies require living tissues for their development and are consequently termed obligatory sarcobiots Of these one group lays its eggs in places where the first-stage larva is likely to have access to a living host whose unbroken skin it can penetrate Examples are afforded by *Cordylobia anthropophaga* the tumbu fly of tropical Africa and *Dermatobia hominis* of tropical America

Other flies may deposit their eggs or larvae in or near surface wounds and diseased tissues infestation in such cases is multiple and many varieties of cutaneous and mucosal myiasis result The best known examples of such facultative sarcobiots are *Chrysomyia bezziana* the Old World screw worm fly and *Wohlfahrtia magnifica* the spotted flesh fly of Russia and the Near East Penetration of the skin by larvae of cordylobia and dermatobia can be single or multiple

Clinical features

The penetrated skin may not give rise to symptoms but some individuals complain of pricking and itching and present a small red papule at the site of entry This is usually on a covered part in the case of cordylobia but may be anywhere on the body surface The lesion proper develops after a few days and resembles a small boil it is tender and frequently exudes sero purulent fluid The neighbouring lymphatic glands may be enlarged Severe infestations may be extremely painful and cellulitis or other serious complications can occur

Diagnosis

Diagnosis is made by observing the small central dimple in which the posterior part of the larva presents (see Fig 226) the presence of a serous exudate during the development of an unripe boil should arouse the suspicion of myiasis in endemic areas Dermatobia infestations differ from the above by the frequency with which uncovered parts are affected and by the larger and more chronic nature of the lesions

The facultative sarcobiots are responsible for maggot infestation of wounds as their larvae subsist solely on necrotic tissue they have been used therapeutically in such conditions as phagedaena and *osteomyelitis* The first stage larvae of gastrophilus species are peculiar for their tendency to wander under the skin they never develop further This condition has been described as larva migrans and creeping eruption but is not to be confused with the nematode *infestation* described later under the same titles From the available descriptions of gastrophilus infestation the coarse tracks with nodular thickenings are not likely to be confused with the uniform linear serpiginous lesions of the nematode infestation

undecylenate These powders have high fungistatic properties are non irritant and are easy to apply to the feet *groins and axillae after bathing*

In the writer s experience the two commonest causes of minor trauma permitting the entry of pyogenic bacteria are also to a great extent avoidable The wearing of shorts , though comfortable *predisposes to scratches while walking through bush* or long grass country consequently the knees are a frequent site for the development of *ecthyma* *Insect bites* which are scratched open form another portal for the entry of infection these may largely be prevented by the intelligent use of anti mosquito precautions and especially the newer repellants such as dimethylphthalate

Protection against sunlight

White persons whose skin does not tan should protect as much as possible of the body surface by suitable clothing and headgear If they reside in a tropical or sub tropical climate for many years however, degeneration of the exposed skin is bound to occur, *in such cases solar keratoses should be watched at regular intervals* and any threatened local malignancy promptly treated by destruction For protection against occasional and unavoidable exposure so-called sunproof creams and oils have their uses The bases should not be such as are easily washed off by sweating and creams should contain soft paraffin which, itself filters out a proportion of ultra violet rays The least irritating ingredients which have a fair degree of efficiency are quinine hydrochloride and salol (phenyl salicylate), these should be incorporated *in strengths of 5 and 10 per cent respectively They should* obviously be applied before exposure to the sun and re applied twice during the day

THE TREATMENT OF SKIN DISEASES IN HOT CLIMATES

The practitioner must bear in mind the ever present tendency of the skin to become macerated When the flexures are affected for instance in seborrhoeic dermatitis fungus infections or in certain cases of psoriasis access of air to the parts and avoidance of friction are of great importance In such cases rest and separation of opposing *surfaces are essential and in general occlusive dressings and greasy applications* are to be avoided It must also be remembered that such macerated areas require lower concentrations of medicaments as the normal barrier of the stratum corneum is weakened Indeed, as the danger of sensitization to external applications is increased under tropical conditions the excessive use of strong remedies and antiseptics is in any case to be avoided

Applications should as far as possible consist of paints such as weak solutions of silver nitrate or gentian violet powders and shake lotions *ointments should* never be used unless a paste containing the desired remedies has proved both non irritating and ineffective It is advisable also to keep down the *pH* of local applications by incorporating when possible dilute and relatively non irritating substances such as boric or acetic acid Wet dressings should not be used for *longer than 24 hours unless absolutely indicated* dry dressings should be permeable and scanty and tight bandaging should be forbidden The writer who had experience of treating *dermatological cases where shade temperatures of 120 F* and over were common obtained excellent results by abandoning all dressings and keeping affected parts exposed to the air under fly proof cages

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T penetrans (chigoe or sandflea) breeds in the filth of badly swept cracked floors The impregnated female rapidly burrows into any part of the human body surface which may be available—usually the foot—and there forms a tense pea sized swelling This represents the enormously distended abdomen of the flea which retains the eggs until they are mature and then expels them through the terminal segments of the abdomen this may be seen as a small black spot in the centre of the swelling Movement of the affected part apparently helps the ejaculation of eggs by compressing the gravid female

The parts most commonly infested are the feet especially the toes and the lateral borders and the fingers any part of the body surface may however be affected The number of lesions varies from one to several hundred severe infestations are more commonly seen in paupers lunatics and among tribes where the jigger is a recent importation Such communities suffer severely from complications until they have mastered the technique of extraction of the flea

Rupture of the gravid female with extravasation of the eggs into the tissues is a common cause of inflammation and badly infested cases frequently become infected with pyogenic bacteria Cellulitis and septicaemia may supervene and lead to the loss of toes or limbs or even to death In some cases the condition has provided an entry for infection with tetanus and in others has precipitated phagedaenic ulceration

Diagnosis

The diagnosis is usually simple the tense pale swelling with a central black spot being characteristic Severe cases with secondary infection may present a honey combed appearance but typical lesions can usually be found The diagnosis may be confirmed either by puncture of the swelling and recognition of the eggs with a lens or by extraction and identification of the flea

Treatment

Treatment of individual lesions comprises removal of the parasite by a needle inserted into its abdomen natives of areas where the disease has been endemic for a long time are usually adept After the flea has been removed a drop of tincture of iodine is placed in the small wound which remains When there are numerous lesions good results are obtained by painting all affected areas with an emulsion of 2 per cent of D D T powder and 20 per cent of benzyl benzoate Two or three daily applications are usually sufficient to produce cure *Secondary infections* are best treated with penicillin either as a cream or by intramuscular injection according to the severity of the case Prevention consists in educating backward populations regarding cleanliness in the home in the treatment of affected individuals and in the periodic use of D D T powder on floors which may harbour the parasite

ONCHOCERCIASIS

Definition

Onchocerciasis is an infestation with the nematode parasite *Onchocerca volvulus* which leads to certain nodular cutaneous and ocular changes

Treatment

Treatment of cordylobia and dermatobia infestations must be governed by the consideration that the disease is self limiting if left alone the larvae, on reaching maturity emerge from the skin in order to pupate Hence vigorous attempts at expression or removal by traction are not recommended In the writer s experience

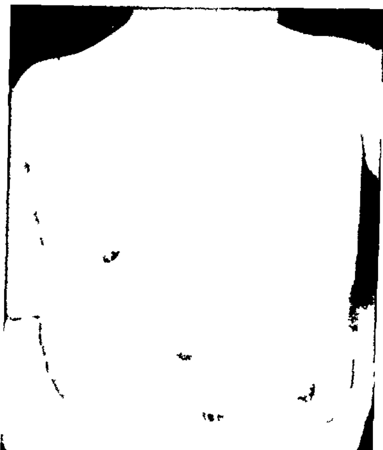


FIG 226 —Cutaneous myiasis Cordylobia infestation in a European child

the best local treatment consists of simply applying a coat of Vaseline under a lint dressing this occludes *the spiracles of the larva which usually* emerges promptly under the stimulus of asphyxia It is a mistake to incise small un complicated furuncles Secondary infection *must be treated according* to the degree of tissue involvement penicillin therapy and evacuation of large collections of pus may be required

JIGGER INFESTATION

Jigger infestation (tungiasis) originated in South America where *the causative* flea *Tunga penetrans* was originally a parasite of the pig It was introduced into tropical Africa in the nineteenth century and became widely disseminated

liable to this complication The first symptoms are usually conjunctival irritation and photophobia and the presence of microfilariae in the eye may then cause

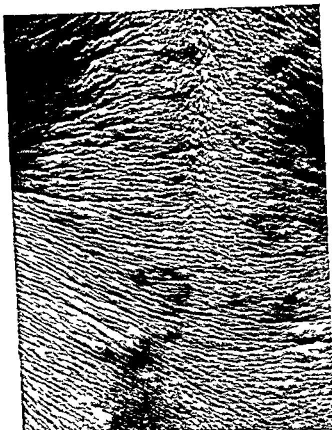


Fig 727 —Cutaneous onchocerciasis A native of Kenya

keratitis irido cyclitis or diffuse retino-choroiditis with optic atrophy any of these conditions frequently leads to complete blindness

Miscellaneous lesions

Certain cases of elephantiasis and of hydrocele have been attributed to oncho cercal infestation but proof of this causation is not convincing

Diagnosis

Although the geographical distribution of this type of lichenification and of onchocercal nodules is co extensive only a minority of cases of the dermatosis present nodules and not all cases with nodules show skin changes though active larvae can usually be found in biopsy excisions of the skin in such persons

The nodules must be differentiated from the juxta articular nodes of yaws syphilis and pinta This may be done by excision of a whole nodule subsequent

Geographical distribution

The disease in humans has not, so far been reported outside the tropical zones of Africa and America In these regions its incidence is limited by the distribution of the intermediate host

Aetiology

Adult parasites are found in fibrous subcutaneous nodules and occasionally *lying free in the deeper layers of the skin* The microfilariae are numerous in the nodules and may also be recovered from the skin and in some cases, from the anterior chamber of the eye The development of these microfilariae in *Simulium damnosum* was first demonstrated by Blacklock (1926), other species of simulium have also been proved to act as intermediate hosts

Few instances of infestation have been reported from Europeans but natives in certain areas of Africa may show a high incidence adult males whose agricultural pursuits render them especially liable to the bite of the diurnally feeding simulium seem to be principally affected

Clinical features

Nodules

These vary in size from barely palpable subcutaneous thickenings to smooth non tender tumours of the size and shape of a pigeon s egg They may be single or multiple and tend to be situated over or near bony prominences the trochanters the scapulae elbows and knees being common sites In some areas notably in Central America nodules commonly appear beneath the scalp

Cutaneous lesions

The earliest lesions are papular but by scratching and infection pustules and ecthymatous sores are commonly produced Later the affected skin becomes thickened and presents numerous closely set ill defined plaques which eventually coalesce to form large grossly lichenified areas (*see* Fig 227) Such areas are most marked where the simulium is more prone to bite in African cases on the buttocks and thighs When this condition has lasted for some time it is usual to find enlarged rubbery regional lymphatic glands In American cases attacks resembling erysipelas and associated with a raised temperature affect the face and eyes The dermatosis comprises many cases termed craw craw in West Africa and *la gale filarienne* (filarial itch) in French and Belgian territories

It was formerly thought that the pruriginous and lichenified lesions might at least be partly due to the repeated irritating bites of the simulium fly but the writer (1943) has been able to show that this is not necessarily so As many patients presenting nodules have no cutaneous lesions although microfilariae may be found in the skin in large numbers it is probable that the skin lesions in other cases represent an allergic cutaneous reaction to the parasite

Ocular lesions

The microfilariae are presumed to reach the eye by way of the palpebral conjunctiva patients in whom nodules are situated about the head and neck are more

liable to this complication The first symptoms are usually conjunctival irritation and photophobia and the presence of microfilariae in the eye may then cause

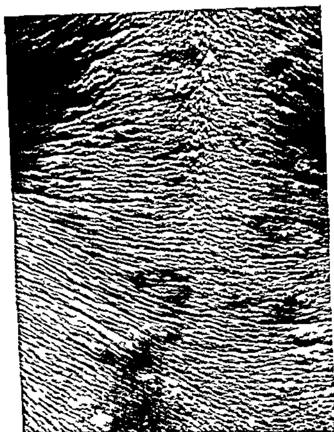


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The nodules must be differentiated from the juxta articular nodes of yaws syphilis and pinta This may be done by excision of a whole nodule subsequent

dissection revealing the adult worms or more simply, by aspiration this yields a *fluid teeming with microfilariae*

Lichenification may follow other chronic irritating dermatoses such as scabies but it is rare to find lichenification so pronounced outside districts where onchocerciasis is endemic

Identification of parasite

The most convenient method of looking for microfilariae in the skin is that described by Blacklock and Southwell (1940) selecting a likely area for instance near a nodule, the skin is lifted with the point of a needle and a minute fragment removed with a sharp scalpel the shaving should be so superficial that bleeding is minimal The fragment is then placed in a watch glass with normal saline solution under a low power microscope and live larvae usually emerge within 15 minutes Parts of microfilariae may also be seen in stained sections of affected skin but they are easy to overlook

When the eyes are affected examination with the slit lamp may disclose living *microfilariae in the anterior chamber A blood eosinophilia of from 10 to 50 per cent* is commonly present in all forms of the disease

Treatment

Though there is some doubt as to whether the encapsulated adult parasites actually contribute to the number of free microfilariae, their removal is a very minor procedure and should be performed in all cases Intravenous tartar emetic may reduce the number of microfilariae in the skin and it is possible that some of the newer antimony compounds *will* be of greater service Superficial x ray therapy had produced amelioration of symptoms in cases showing lichenification, but has produced no change in the numbers of microfilariae The *outlook* as regards complete recovery is poor with the remedies at present available and extremely bad as regards preservation of useful vision when the eyes are affected

CREEPING ERUPTION

Creeping eruption (larva *migrans or sandworm disease*) though originally described in cases of myiasis is in tropical and subtropical areas usually caused by the wanderings of a *nematode larva in the upper* levels of the skin This larva when demonstrated is shown to be an immature stage of the dog and cat hookworm *Ankylostoma braziliense*, or of a closely allied species

Geographical distribution

The disease is encountered in most tropical and subtropical countries it is especially prevalent *in the southern parts of the* United States of America where Kirby Smith and his co workers (1926) had ample material for their pioneer *studies and on the* East Coast of South Africa

Aetiology

It has been shown that typical creeping eruption can be produced by the larvae of *ankylostomes bred from ova* found in dogs faeces These larvae can penetrate

unbroken skin and it is supposed that their migration near the surface is the consequence of their having entered a host unsuitable for further development They hatch out readily in warm moist sand or earth hence the frequency with which the disease is contracted during a seaside holiday Children are affected more commonly than adults

Clinical features

De Meillon (De Meillon and Lavoipierre 1944) who applied ankylostome larvae bred from dog faeces to his own arm noted that their entry through the skin produced no sensation at the time On the following day itching and erythema appeared



FIG 228 —Creeping eruption Natural size

at the site a red papule was seen on the next day and on the fifth day after inoculation a serpiginous track over an inch in length was visible Itching was intermittent and severe especially pronounced at night and in a hot bath The typical track is looped or serpiginous (*see* Fig 228) often with acute angles or branches where the parasite has returned along the original burrow and struck out in a new direction The track is raised and palpable averaging about 2 millimetres in breadth and may extend for over a foot in length its rate of progress usually being more than an inch a day the advancing extremity presents a tiny erythematous papule As a rule the track is of normal skin-colour or faintly reddened but pronounced erythema and even vesiculation are present in some cases When infestation by several larvae has taken place a confused tangle of tracks is seen the area is often excoriated and secondarily infected from scratching (*see* Fig 229) and the true nature of the complaint may be overlooked unless the edges are carefully examined for emerging tracks Such multiple infestation is common (over 100 larvae have been reported in one case) and accounts for therapeutic failures in many cases in which only one track has been treated

The sites most commonly affected are the feet legs thighs and buttocks—that is the parts most in contact with contaminated sand—but any part of the body surface may be invaded and even (rarely) the oral mucosa and the conjunctiva



FIG 229 —Creeping eruption Multiple infestation with secondary infection

Diagnosis

The larvae of certain arthropods (*see* Cutaneous myiasis page 521) may produce linear tracks superficially resembling those described above but the curved serpiginous or angled lesion produced by the nematode larvae is characteristic The parasite may be found in sections of biopsy material a few millimetres ahead of the advancing end of the track The inflammatory reaction usually occurs behind the advancing larva and comprises chiefly polymorphonuclear leucocytes and eosinophils As a rule there is no eosinophilia of the circulating blood in uncomplicated cases

Complications

Scratching and consequent secondary infection may mask the underlying condition The occurrence of Lœffler s syndrome (transient migrating pulmonary infiltrations) has been reported in about one half of a series of cases of whom radiographic studies were made eosinophilia of the blood and sputum was an inconstant finding

Treatment

The numerous remedies advised and still being proposed are evidence of the uncertainty of any single procedure It is possible that the failures occasionally encountered with all these treatments are due to the parasite having migrated from the area treated It has been suggested that the parasite may temporarily penetrate below the skin and thus escape being killed by measures which are usually successful this hypothesis has support from the fact that the larva is extremely delicate and as a rule is easily killed by a variety of procedures

Freezing with ethyl chloride is the simplest method An area centred on the advancing end of the track is frozen for 2 minutes and no further treatment is needed in many cases Should the larva have escaped a second or third treatment may be required An alternative remedy is the application of lint soaked in concentrated Tincture of Pyrethrum (*B P C*) and covered with oilskin twice daily for 3 days Other methods include repeated painting with tincture of iodine the injection of a few drops of chloroform or of 1 1 000 bichloride of mercury and the application of collodion containing ethyl acetate in place of the usual sulphuric ether Whatever m thod of treatment is used it is advisable to mark the end of the burrow with a scratch so that one may know accurately whether the condition is progressing

Systemic remedy

When multiple infestation has occurred one naturally looks for a systemic remedy Smith (1943) and subsequent authors reported good results from injections of Fouadin but later workers have not been able to confirm this claim (Dolce and Franklin 1945) Anthiomaline given by intramuscular injection to a total of 4 doses (½ 1 2 and 4 millilitres in the adult) is also said to have given good results It seems likely however that other and even more successful antimony compounds will eventually be elaborated

X ray therapy

In stubborn cases x ray therapy deserves a trial Vassallo (1939–40) reported a series of 22 successfully treated cases in 1940 each receiving only a single exposure of an apparently subfractional dose in de Meillon s case 5 doses of 100 r (160 kilovol s 3 millimetres A C) given within a period of 7 days terminated the infestation The writer s experience in 2 cases was not encouraging

GROUND ITCH

Ground itch frequently occurs in regions where hookworm disease flourishes but it rarely comes under the notice of the physician as the complaint is considered

a trifling one As the larvae producing ankylostomiasis thrive in the soil it is to be expected that ground itch, which marks the site of invasion into man should occur most frequently on the feet and especially in those who habitually go barefoot Cases have been recorded however in which infestation took place through the skin of the hands or the buttocks Itching between the toes is usually the first complaint then slight swelling of the foot appears the itching spreads and finally a few papules and vesicles appear and may be followed by pustulation

SCHISTOSOME DERMATITIS

The immature forms of schistosome which can penetrate the unbroken skin are known as cercariae, these larval forms are not necessarily those of the species which cause bilharziasis but include others which are prevalent outside the tropics Such cercariae cause only a temporary irritation and papulation on entering the body the condition being known in parts of Canada and the United States of America as swimmers itch When *Schistosoma haematobium* and *S mansoni* are concerned and bilharziasis (schistosomiasis) ensues other dermatoses may be seen These include urticaria referable to the allergenic properties of the adult worms a papular or vesicular eruption from which eggs of schistosoma may be aspirated (Black, 1945) and a granulomatous condition of the perineum due to the irritation of the ova of *S mansoni*

GUINEA WORM INFESTATION

Guinea worm infestation or dracunculosis results from invasion of the human tissues by a nematode *Dracunculus medinensis* The adult female worm measures about 2 feet in length, the male about 1½ feet They live in the subcutaneous tissue of man and reproduction takes place by the liberation of larvae through a breach in the host s skin these larvae are ingested by a minute freshwater crustacean called cyclops and ingestion of the infested cyclops by man completes the cycle

In order to shed her larvae the female guinea worm provokes a cutaneous vesicle and when this has ruptured, her head and genital pore are exposed in the base of the minute resulting ulcer The application of cold water stimulates the female to discharge her larvae and this process continues intermittently for a period of 2 or 3 weeks

Dracunculosis is found in nearly all parts of tropical Africa and has been intro duced by Negro slaves into America where it occurs in the West Indies Guiana and the north of Brazil Cutaneous changes associated with guinea worm infesta tion comprise preliminary severe irritation then the formation of a vesicle and finally an ulcer which varies in size and severity according to the state of cleanliness and general health of the patient Dracunculosis is often the exciting cause of a tropical ulcer or when the worm dies in the tissues of cellulitis and other severe septic complications The site of appearance of the gravid female is usually about the ankle for this part of the body is more likely to come into contact with water than any other part a fact apparently well known to the blind deaf untutored worm Generalized urticaria commonly accompanies the development of the female in the tissues and precedes her appearance at the surface

Treatment

The simplest safe treatment of dracunculosis consists in *encouraging the discharge of all larvae by application of* cold water or better by the momentary *application* twice daily of an ethyl chloride spray in the intervals a moist flavine dressing may be applied When no more larvae are left the parent worm is injected with a few drops of 1 1 000 bichloride of mercury solution and extracted gradually this extraction sometimes taking several days Attempts at extraction before the larvae are voided or too rapidly afterwards often lead to rupture of the worm and serious septic consequences Prophylactic treatment directed to the isolation of sufferers and protection of drinking water is of course of prime importance

FUNGUS DISEASES IN THE TROPICS

Few mycoses are found exclusively in the *tropics* but warmth and lack of hygiene account for the frequency with which some of the universally occurring fungus diseases are seen The few mycoses which are described in this chapter are customarily included in treatises on tropical diseases but the practitioner must be prepared to encounter most of them in temperate regions as well

Achromia parasitica

This is not a disease but an appearance produced by various dermatophytes It probably includes several conditions formerly given such names as tinea flava and tinea alba Essentially it is a diminution or loss of pigment in limited areas various fungi have been recovered from the horny layer of these lesions There is some difference of opinion as to whether the fungi themselves exert a depigmenting effect or *whether the thickened parasitized stratum corneum simply filters out* those actinic rays which stimulate pigmentation these theories are not mutually exclusive and both mechanisms probably coexist in most cases

The lesions most commonly seen are shown in Fig 230 They have the distribution of pityriasis versicolor and are in every other respect identical with this condition except in their partial loss of pigment Scrapings from this case showed an *organism morphologically* identical with *Microsporon furfur* Treatment *is as for pityriasis versicolor restoration of* pigment lags several months behind actual cure and this fact must be remembered when a prognosis is given

Mycetoma

Mycetoma (Madura foot) is a chronic granuloma with a pronounced tendency *to cause tissue destruction* It is caused in most cases by aerobic species of actinomyces in contrast to the common form of actinomycosis which *is produced by the* anaerobic species The remaining cases are termed maduromycoses and are caused by fungi other than species of actinomyces All have this in common that the discharges contain bodies of various sizes and different colours which are termed *grains* *such bodies* are composed of fungal elements Similar clinical conditions in which *grains* are *absent* are *called* pseudo mycetoma or paramycetoma

The disease has been reported from India the Far East many parts of *Africa and* from Central and North America

a trifling one As the larvae producing ankylostomiasis thrive in the soil it is to be expected that ground itch which marks the site of invasion into man should occur most frequently on the feet and especially *in those who habitually go* barefoot Cases have been recorded however, in which infestation took place *through the skin of the hands or the buttocks* Itching between the toes is usually the first complaint then slight swelling of the foot appears the itching spreads and finally a few papules and vesicles appear and may be followed by pustulation

SCHISTOSOME DERMATITIS

The immature forms of schistosome which can penetrate the unbroken skin are known as cercariae, these larval forms are not necessarily those of the species which cause bilharziasis but include others which are prevalent outside the tropics Such cercariae cause only a temporary irritation and papulation on entering the body the condition being known in parts of Canada and the United States of America as swimmers itch When *Schistosoma haematobium* and *S mansoni* are concerned *and bilharziasis (schistosomiasis) ensues other dermatoses may be seen* These include urticaria referable to the allergenic properties of the adult worms a papular or vesicular eruption from which eggs of schistosoma may be aspirated (Black 1945) and a granulomatous condition of the perineum due to the irritation of the ova of *S mansoni*

GUINEA WORM INFESTATION

Guinea worm infestation or dracunculosis results from invasion of the human tissues by a nematode *Dracunculus medinensis* The adult female worm measures about 2 feet in length the male about 1½ feet They live in the subcutaneous tissue of man and reproduction takes place by the liberation of larvae through a breach in the host s skin these larvae are ingested by a minute freshwater crustacean called cyclops and ingestion of the infested cyclops by man completes the cycle

In order to shed her larvae the female guinea worm provokes a cutaneous vesicle and when this has ruptured her head and genital pore are exposed in the base of *the minute resulting ulcer* The application of cold water stimulates the female to *discharge her larvae and this process continues intermittently for a period of 2 or 3 weeks*

Dracunculosis is found in nearly all parts of tropical Africa and has been introduced by Negro slaves into America where it occurs in the West Indies Guiana and the north of Brazil Cutaneous changes associated with guinea worm infestation *comprise preliminary severe irritation* then the formation of a vesicle and finally an ulcer which varies in size and severity according to the state of cleanliness and general health of the patient Dracunculosis *is often the exciting cause of a* tropical ulcer or when the worm dies in the tissues of cellulitis and other severe septic complications The site of appearance of the gravid female *is usually about* the ankle, for this part of the body is more likely to come into contact with water than any other part a fact apparently well known to the blind deaf, *untutored* worm Generalized urticaria commonly accompanies the development of the female in the tissues and precedes her appearance at the surface

pinkish or purplish nodules (*see* Fig 231) The surface of the affected part is firm and elastic and does not pit on pressure cutaneous sensation is unaffected though deep sensibility may be reduced or lost If the foot is affected the leg becomes atrophied from disuse and the limb eventually presents the unpleasing suggestion of a seed potato on a toothpick



Fig 231 —Mycetoma in a native of Uganda The foot also shows the pigmentary changes of tertiary yaws

On section the affected tissues are seen to be honeycombed with cavities and sinuses which are packed with the variously coloured fungi The normal internal structure of the part has disappeared in advanced cases bones being represented only by a few crumbling fragments fibrous structures appear to offer the greatest resistance to the invading organism Between the sinuses the tissue is granulomatous amorphous oily or gelatinous rarely with some fibrous overgrowth The lymphatic glands draining the part have sometimes been found infected with the fungus

The grains vary in size the smallest are those produced in *Indiella mansoni* infections measuring about ¹ millimetre the largest occur in the black varieties and are composed of granular concretions sometimes attaining the size of a pea They may be rough or smooth and on microscopic examination are seen to consist of radiating or interlacing strands of mycelium with or without chlamydospores

Incidence

The disease is common in Negroes though it is unnecessary to assume a racial predisposition as residence in a warm climate and the habit of walking barefoot are important predisposing causes As stated above the exciting cause is the entry of the organism through a breach of the surface usually on the sole of the foot and



FIG 230 —Achromia parasitica European male

Mode of infection

The fungus probably always gains access to the tissues through a local breach of the surface This accounts for the large number of cases located in the foot as compared with other parts of the body and is supported by the occasional discovery of a foreign body in a mass of mycetomatous tissue In this connexion we should remember that many species of actinomyces are normally present in the soil in enormous numbers and probably also on thorns twigs and in decaying vegetable matter

Clinical features

The lesion usually appears within a month of infection often on the sole of the foot as a firm painless swelling which after a variable time ruptures and discharges a viscid pus in this pus are found the typically coloured granules often compared with fish roe in the white and red varieties and to coarse gunpowder in the black variety The discharge continues to exude while the disease extends deeper into the tissues producing the typical enlargement the natural contours of the affected part are lost and thus the foot for instance shows a convex sole the toes are separated and point in different directions and eventually the part may resemble an egg shaped structure 2 or 3 times the normal size While these changes are taking place sinus formation on a large scale occurs and there is a continual discharge of viscid pus sometimes oily sometimes blood stained often foetid and typically containing the characteristic grains The mouths of the sinuses are usually seen as

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Clinical features

Symptoms of pain or irritation are usually absent the appearance of the lesions being the sole complaint Among Negroes in Africa shaving off the body hair is very frequent and they consequently do not show signs of the disease although they



FIG 233 —Hair affected with *T beigeli*

may be infectious The appearance of nodules of pin head size, or even smaller, on the hair of the scalp eyelashes beard axillae or pubis characterizes the disease The nodules are hard and gritty and vary in colour according to the causative fungus In piedra they are dark in the other varieties they may be red, yellow or brown

Diagnosis

Trichomycosis must be distinguished from other conditions causing nodular swelling of the hair shafts such as trichorrhexis nodosa trichonodosis and monilethrix Careful scrutiny with a lens serves to differentiate these conditions which are due to actual changes in the hair and not to external parasitism

Treatment

Shaving does not cure the disease its return being almost inevitable when the hair is allowed to grow again In piedra when there is much matting of the hair preliminary washing with benzine is indicated subsequently the following lotion is applied, twice daily to the hairs only

Liq Formaldehyd – – –	60 min
Sp Meth Indust – – –	ad 6 oz

Sulphur ointment (2 per cent) is applied at night Prolonged treatment is required to eradicate the infection

Tinea imbricata

Tinea imbricata (Tokelau ringworm) is widespread in Asia in tropical countries adjacent to the Indian and Pacific Oceans and in recent years it is said to have extended to Africa and South America As Manson observed tinea imbricata is confined to warm moist parts where the coco nut palm grows and hence it is possibly more common than is suspected in the coastal regions of tropical Africa

Infection is conveyed by direct or indirect contact and both sexes seem to be effected equally the incubation period is said to be from 7 to 10 days

Clinical features

Tinea imbricata is unlike any other ringworm in that during the progress of the disease no central smooth area is seen again the scales which are so typical of ringworm are in this case large and of the consistence of tissue paper and overlap each other like the tiles of a roof To raise the scales the lesions must be stroked from the centre outwards stroking in the opposite direction flattens them Actually the individual patches are composed of several concentric rings of scales though this may not be apparent at first sight and on removing the scales dark lines show the position of these rings The appearance of the lesions has been aptly compared with that of watered silk

The greater part of the body may be affected but the scalp is immune in some cases the nails are thickened and cracked and examination of nail fragments reveals the causative fungus *Trichophyton (Endodermophyton) concentricum* The hair follicles are said never to be affected Severe itching is the chief complaint and is a very intractable symptom in this condition

Treatment

Numerous remedies can produce temporary improvement but few are able to bring about a permanent cure in even half of the number of cases treated Chrysarobin or Cignolin ointment (5 per cent) formalin solution (40 per cent) or resorcin (20 per cent) dissolved in compound tincture of benzoin are probably the most effective and good results have been reported from the use of Luhn s formula

Acid Salicyl		–	–	1
Acid Acet Glac	–	–	–	1
Sp Vin Meth	–	–	–	9

Whatever the remedies he tries however the physician must be prepared for numerous relapses and disappointments before a cure is obtained

Histoplasmosis

This uncommon systemic fungus disease is mentioned in this chapter because of the superficial resemblance of the spores of *Histoplasma capsulatum* to *Leishmania* The disease has been encountered in most parts of the world and there is no precise evidence regarding its mode of transmission It belongs to the group of chronic infective granulomas and is a subacute to chronic febrile condition characterized by enlargement of the liver and spleen and by anaemia and leucopenia In view of these symptoms and signs and of the fact that their causative organisms are liable to be mistaken on direct examination confusion with kala azar is possible

A proportion of cases of histoplasmosis shows ulceration of the mouth with or without cutaneous lesions These may be purpuric ulcerated impetiginous or furuncular no specific lesions have been described Treatment is of no avail and the great majority of cases terminate fatally Miller and his associates (1947) have described the cutaneous signs in detail

Clinical features

Symptoms of pain or irritation are usually absent, the appearance of the lesions being the sole complaint Among Negroes in Africa shaving off the body hair is very frequent and they consequently do not show signs of the disease although they



Fig 233 —Hair affected with *T beigeli*

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FIG 234 —Sporotrichosis showing primary and secondary lesions



FIG 35 —Sporotrichosis Primary lesion and secondary nodules along the lymphatics

severe cases nodules are formed in the bones muscles and viscera in fact systemic sporotrichosis has occurred In the absence of this complication sporotrichosis runs a relatively benign though chronic course and may undergo spontaneous cure after an interval of months or years

Diagnosis

The typical case should be recognized at sight with its primary chancre like lesion and extension by secondary lesions along inflamed lymph channels Frequently however there is a far greater resemblance to other infective granulomas and in these cases recourse must be had to laboratory aids

SPOROTRICHOSIS

Sporotrichosis or rhinocladiosis is widespread but of *infrequent incidence* and resembles some other fungus infections in that the causative organisms are normally saprophytes in manure and soil Sporotrichosis shows itself in various ways it may run an acute or chronic course it may be primarily cutaneous or visceral, and cases may arise sporadically or in epidemics A recent outbreak in the gold mines of South Africa affected nearly 3 000 individuals and afforded a unique opportunity of studying many aspects of the disease This account embodies much of the knowledge thus gained

Aetiology

The causative fungus (*Sporotrichum* or *Rhinocladium schenkii vel beurmanni* in most cases) gains access to the body through a pre existing breach of the skin Sporadic cases are probably largely due to soil contamination others have been reported as caused by direct infection from mules suffering from the disease *In the* South African outbreak it was found that the saprophytic growth of sporotrichum on wooden pit props was the essential factor the spores which may remain viable *in the dried state for 2 years are disseminated to unaffected timber by* water and by insects Both sexes and all races are susceptible at any age occupational factors being the important predisposing cause

Clinical features

The incubation period is usually from 3 to 4 weeks but gross variations may occur

The initial lesion occurs at the site of inoculation which is commonly on an unclothed part liable to abrasion The common variety is a papule which becomes pustular and then by a central breakdown produces an indolent ulcer Relative painlessness is a feature of such lesions in the absence of secondary infection The ulcer has a red base and ragged frequently undermined, edges, it is often surrounded by small pink papules which do not contain pus The size of this initial lesion varies from a barely perceptible ulcer to one measuring more than *an inch* across At this stage spread by lymphatics takes place and one or more nodules appear proximal to the ulcer (*see* Figs 234 and 235) between these the affected *lymph vessels may often be felt as hard cords*

Before rupture the nodes are often dusky or violaceous in colour and fluctuation can be elicited afterwards the ulcer is crateriform with elevated margins and *covered with a loosely adherent crust Atypical lesions are frequent* and they may resemble to a marked degree the appearance of tuberculosis verrucosa cutis tertiary syphilis, leishmaniasis maduromycosis or actinomycosis

The primary *sore or chancre as it is sometimes called* may also be atypical and papular , plaque and warty types are described Such variations depend partly on the individual s resistance and partly on the depth of inoculation

The course *of the disease is usually chronic* and the general health may remain undisturbed, painless nodules develop on various parts of the skin and mucous membranes and eventually rupture leaving more or less tortuous sinuses In more

CHAPTER 35

DERMATOSES CAUSED BY PROTOZOAL BACTERIAL AND VIRUS INFECTIONS

L J A LOEWENTHAL

CUTANEOUS LEISHMANIASIS

CUTANEOUS leishmaniasis (oriental sore Delhi Baghdad or Aleppo boil or espundia) may be defined as the cutaneous or mucous membrane lesions which follow the inoculation into these tissues of the protozoon *Leishmania tropica* A distinct dermatosis known as post kala azar dermal leishmaniasis may occur as the result of systemic infection with *L donovani* usually some time after recovery from kala azar

Geographical distribution

The disease is encountered in all countries bordering on the Mediterranean and is especially prevalent in the Levant It is endemic in areas extending from southern Russia to south of the equator in Africa and to the east it is found to affect communities in Arabia Iran Iraq Turkistan India and China In South and Central America it is most prevalent in Brazil and Peru but has been reported from every country in the tropical and subtropical zones

Aetiology

It is believed that the majority of cases are infected by the bite of an intermediate host a species of phlebotomus but direct inoculation of infected material from a sore is also known to produce the condition In severely affected regions the majority of infections are contracted in childhood but no age is immune When outdoor occupation entails more risk of exposure to infected insects as in parts of South America the male sex is affected predominantly

The parasite is morphologically and culturally indistinguishable from *L donovani* and the differentiation has been based purely on clinical grounds and on the fact that cross immunity in man has not been demonstrated The bestowal of other specific names on leishmania found in South American cases has not yet been justified

Clinical manifestations

After an incubation period varying from several days to many months an itching papule appears at the site of inoculation This is commonly the face the hands or other exposed area but any part of the body surface may be affected A small proportion of cases especially in South America present a lesion on the oral or nasal mucosa Though a single sore is most frequently observed two or three are not uncommon and numbers up to several hundred have been reported

Direct examination of pus rarely shows the causative fungus and culture of pus on a Sabouraud type of medium is indicated in the drier varieties of lesion inocula tion of expressed blood or serum is adequate Cultures must be sown before treat ment is instituted as the discharges become negative very rapidly Intraperitoneal inoculation of a mouse may also be used the fungus being found in the testes after three weeks

The disease must be differentiated from all other forms of subacute and chronic ulceration Careful inspection will usually exclude warts and malignant neoplasms but cutaneous tuberculosis tertiary syphilis and yaws blastomycosis and oriental sore will require the aid of laboratory methods When these are not available the therapeutic test is of value

Treatment

Iodides are specific when given in adequate dosage Amounts of 30 grains 3 times daily suffice to cure most cases but occasionally a daily total of 150 grains is required If symptoms of iodism become very distressing administration of the drug is interrupted for 1 or 2 days and then resumed in the previous dosage, as a rule no harm ensues from continuing the treatment under these conditions The addition of tincture of belladonna 5 minims 3 times daily to the iodide mixture is claimed by some to reduce the incidence and severity of iodism Complete cure usually takes about a month and requires 2 000–3 000 grains of iodide, stubborn cases however may need as much as 8 000 grains for complete cure

Prophylactic treatment is called for only rarely when the disease occurs in epi demic form In the South African outbreak spraying of the infected timber and prompt treatment of all cases was entirely successful

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ulcer are clear cut and its base is covered with dirty yellow debris among which granulations may be seen it is frequently surrounded by oedema Atypical varieties may be nodular (*see* Fig 236) or may resemble keloid verrucose tuberculosis of the skin lupus vulgaris (*see* Fig 237) or the papillomatous lesions of yaws Secondary peripheral lesions frequently appear and may take the form of miliary nodules or pustules from which the organism may be recovered The ulcer causes little pain and, in the absence of secondary infection is unaccompanied by regional adenitis Untreated it tends to heal in from three months to a year or more but atypical forms especially those resembling tuberculosis may last much longer The muco cutaneous form (espundia of South America) is less benign it has been reported as beginning on any part of the nasal and buccal mucosae and may produce hyper trophic lesions such as polypi or ulceration of the palate nose and pharynx with consequent disfigurement and profound systemic disturbance

Although healing of an oriental sore is usually accompanied by immunity from further lesions elsewhere it is not uncommon to encounter recurrences in and around the scar years later as in the case shown in Fig 238

Diagnosis

In an endemic area the presence of one or more chronic indolent sores on exposed parts is highly suggestive of oriental sore The diagnosis must however be estab lished by identifying the parasite this may be done comparatively easily in fresh cases by examining marginal scrapings or the material obtained by aspiration from tissue immediately outside the edge of the ulcer In chronic cases the parasite is often difficult to find by these methods and it is usually necessary to examine sections obtained by biopsy excision of the edge even then a negative result must not be taken as excluding cutaneous leishmaniasis especially in the tuberculoid types and recourse should be had to culture of excised material when this can be done Further assistance may be obtained in difficult cases by observing the reaction following an intracutaneous injection of a vaccine of leishmania or of a filtrate prepared from the parasite This usually becomes positive about one week after infection and remains so for life

Differential diagnosis

Accurate differentiation from other forms of ulceration depends on the identi fication of *L tropica* On clinical grounds oriental sore may be distinguished from tropical ulcer by its slower development and the absence of gross tissue necrosis from cutaneous diphtheria by the absence of peripheral anaesthesia and the typical adherent slough Sporotrichosis may be impossible to differentiate on clinical grounds alone Muco-cutaneous leishmaniasis may be confused with gangosa unless the case presents other typical signs of tertiary yaws and with lupus vulgaris Whenever doubt exists and *L tropica* cannot be detected by direct examination exclusion of other causes of ulceration will be aided by bacteriological examination of the secretion by the serological reactions for syphilis and yaws and by careful histological examination of tissue from the lesion

Post kala azar dermal leishmaniasis observed in the Sudan and in parts of India appears as a chronic generalized eruption of small hypopigmented macules which

The initial papule increases in area during the first few weeks and then crusts over, when this crust is removed, a moist, bleeding ulcer is revealed and this may



FIG 236 —Oriental sore ulcerated nodular form



FIG 237 —Recurrent oriental sore resembling lupus vulgaris

itself become larger and deeper possibly as the result of secondary bacterial infection In other cases the scab separates to reveal a healing lesion which gives place to an atrophic depressed scar The fully developed typical lesion measures from one to three inches in diameter and consists of an indolent ulcer the edges of the

AMOEBIASIS CUTIS

An acute sloughing dermatitis marks the invasion of the skin by vegetative forms of *Entamoeba histolytica* This is a rare complication but one which must be recognized promptly as it carries a grave prognosis when untreated A rapidly sloughing dermatitis around the anus or around a laparotomy wound should always prompt a search for the offending protozoon in scrapings from the advancing edge wound infections of this nature are usually the result of operative procedures on a bowel affected by amoebiasis following a mistaken diagnosis of appendicitis or carcinoma A still rarer form is caused by secondary amoebic infection of ecthymatous sores The lesions usually respond promptly to parenteral treatment with emetine and local cleansing

TREPONEMATOSIS

There is a group of diseases the causative organisms of which are by all biological criteria identical and whose clinical manifestations have much in common Two of these diseases—syphilis and yaws—have for long been the subject of controversy many authorities have contended that they are different diseases others that they are at the most varieties of a single disease

A world survey reveals that there is a definite gradation from modern venereal syphilis to the florid yaws of the tropics Hudson (1946) in his memorable monograph collates accounts of numerous diseases due to morphologically indistinguishable treponemas—venereal syphilis non venereal syphilis (for example the so-called syphiloids of south eastern Europe and bejel of the Arabs in Syria) pinta of Central America and yaws as modified by race and climate —and concludes that these are all manifestations of one disease conveniently called treponematosis

There is much to commend this view and little to perpetuate rigid distinctions between say syphilis and yaws such distinctions are in any case misleading in individual cases the differentiation of extragenital syphilis from yaws may be impossible and seems unnecessary in view of their identical therapy

Nevertheless certain syndromes exist and just as syphilis forms the subject of a text book description so yaws pinta and bejel must be presented as clinical entities

According to Hudson the essential differences in these syndromes are due to their method of spread that is non venereally in primitive unhygienic communities or venereally among the better washed and better clothed and to the age at which they are acquired All are characterized by three clinical stages of development and the characteristic tertiary lesions of any one syndrome can always be found in individual cases of the other syndromes

YAWS

This manifestation of treponematosis also known as framboesia is widely spread and affects a large proportion of the inhabitants of certain endemic areas it is essential that the practitioner whose work may lie in such areas should familiarize himself with the various clinical manifestations of the disease Yaws is the result of

may coalesce and later become raised, verrucose or nodular it is sometimes accompanied by a butterfly eruption of the face More than half of such cases are found to have recovered from kala azar within the previous year Though the organism which these lesions yield is *L donovani* indistinguishable from *L tropica* the dermatosis is hardly to be confused with oriental sore

Treatment

A single uncomplicated sore does not call for more than local treatment and successes are claimed for numerous methods The local application of tartar emetic in a paste (1–2 per cent strength) causes considerable pain and should not be used if other methods are available Local infiltration with sodium stibogluconate (Pentostam) a pentavalent antimony compound is said to be highly effective and may be used for lesions on the ears, nose and eyelids without danger Other local methods of cure include one or more injections of quinacrine hydrochloride (mepacrine Atebrin) 1–2 millilitres of a 10 per cent solution being given slowly beneath the lesion berberine sulphate 1–3 millilitres of a 1 per cent solution may be employed similarly although a high percentage of cures has been claimed for this method the writer *in a small series of cases has not been convinced of its efficacy* X ray therapy is to be recommended when available in preference to other local applications Dostrovsky and Sagher (1942) have had excellent results from the use of grenz rays which may be given over long periods and are especially useful in refractory and recurrent cases

When numerous sores are present and in cases of muco cutaneous leishmaniasis *recourse must be made to parenteral administration of antimony* Tartar emetic has been used with success for many years, and is given intravenously the initial dose is 4 millilitres of a 1 per cent solution and this is increased daily by 2 millilitres until 10 millilitres is reached Courses consist of 15 such daily injections and 3 or more courses with intervals of 2 weeks may be required More recently pentavalent antimony compounds have been given with even better results such compounds as Neostibosan Solustibosan Fouadin Neostam and Pentostam are all satisfactory and may be given either by the intravenous or by the intramuscular route

Prevention of the disease by inoculation of living cultures of *L tropica* is now an accepted procedure (Berberian 1944) This method has actually been practised for generations in the Near East by the direct inoculation of ulcer material into a limb the immunity which results some time after a sore has appeared prevents the natural occurrence of other sores elsewhere for instance on the face where disfigurement might result It is customary to refer incorrectly to this procedure as vaccination in actual practice the use of killed organisms as a true vaccine confers no immunity

TRYPANOSOMIASIS

The site of inoculation by the bite of an infected tsetse fly frequently shows a pustule from which trypanosomes may be recovered by aspiration During the next stage a rash is occasionally seen in the white patient and very rarely in the Negro whose pigmentation usually disguises the typical gyrate erythema



FIG 238 — Primary yaws lesion on left forearm

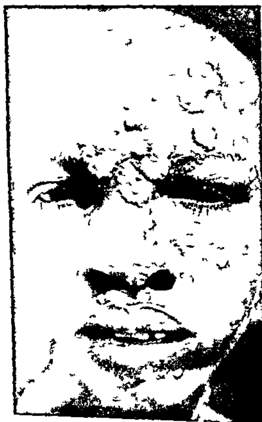


FIG 239 Yaws typical secondary lesions

infection with *Treponema pertenue*, an organism morphologically indistinguishable from and probably identical with *T pallidum* of syphilis

Geographical distribution

All parts of the tropics are or have recently been, endemic areas tropical Africa and the West Indies being especially affected Yaws may be encountered in tropical America many of the Pacific islands, Northern Australia the East Indies Indo China, Siam and Ceylon in addition to the regions mentioned above, it is uncommon in India and China

Aetiology

The treponema enters the body through a breach of the surface for example a scratch or a pre existing ulcer, and usually from direct contact with the sores of an infected person Infection from soiled clothing furnishings and floor dust as well as from direct transmission by flies, is also presumed to be common

The majority of cases are infected in childhood, over 80 per cent between the second and tenth years of life, the sexes being affected about equally Congenital or hereditary yaws is unknown Lack of hygiene is the most potent predisposing cause and this in its turn may be referred to ignorance poverty and lack of an adequate water supply There is no evidence in older patients of transmission of the disease by sexual intercourse

Clinical manifestations

It is customary to divide the manifestations of yaws into three stages, as in the case of syphilis The parallel is indeed close though the succession of the stages may be far more rapid in yaws and the transmissions less clearly cut

Primary lesion

The primary yaw is morphologically similar to a typical lesion of the secondary stage but it is apt to be larger and more luxuriant It is almost always extragenital and most commonly situated on the limbs the lower part of the leg being an especially common situation The primary lesion or mother yaw begins as a papule, this rapidly enlarges exudes serum and takes on a fungoid appearance (*see* Fig 238) The name framboesia is based on a supposed resemb'ance of this lesion to a raspberry

In his survey of yaws in an area of Uganda Hackett (1946a) found signs of the primary yaw in two thirds of cases with typical secondary skin lesions He assumes that infection with yaws may take place without the appearance of the primary lesion at the site of entrance of the virus The writer has noted that in those rare cases in which the primary lesion appears on the prepuce of male infants under one year of age (possibly by contact with infected floors when sitting naked in the hut) it resembles the primary chancre of syphilis being sharply localized ulcerated and having the typical cartilaginous feel

Secondary eruption

The secondary eruption appears a few weeks after the initial yaw either after this has healed or while it is still present and consists of widely scattered lesions which may involve any part of the integument most commonly the limbs and the



Fig 240.—Annular secondary syphilide resembling circinate lesions of yaws

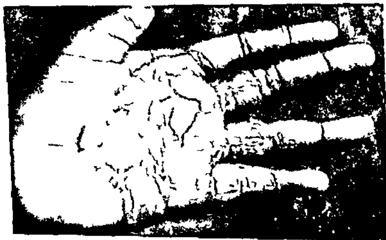


Fig 41.—Yaws secondary palmar lesions

muco cutaneous junctions Individual lesions resemble the primary yaw and are aptly described by Hackett as *granulomatous papules* (*see* Fig 239) The following is taken from one of his publications (1946a)

> These papules vary in size from a few mm to 50 mm or more in diameter The smaller ones are round but the larger ones are oval or elongated their shape probably depending on the movements of the skin The surface although granular in appearance is not true granulation tissue but is made up of greatly proliferated epithelium This is thrown into minute (less than 1 mm) elevations where the prolongations from the corium approach the surface These minute projections are a pale yellow colour tinged by small dilated superficial blood vessels Often the minute contours of proliferated epithelium separating these elevations are much paler or even white so that an *arabesque tracery appearance results* The drying of exuded clear serum in which spirochaetes of the syphilis/yaws type are readily demonstrated produces a surface glaze This is the appearance of an actively developing lesion With decrease in activity a crust develops which, while yellow at first soon becomes discoloured by debris In younger children with anaemia or malnutrition the lesions may not be raised but are erosions with bright pink borders and whitish centres Other clinical forms such as circinate and rupial lesions may occur These lesions are the pianomes of Montel (1944) The number of lesions present varies from a single one to hundreds The trunk may be relatively free and the scalp is not frequently affected Since the surface of these lesions is largely proliferated epithelium on healing only slight scarring may result There is often however an alteration of texture with loss of elasticity At first the scar may be more pigmented than the surrounding skin but within a few months the pigmentation usually fades The scars are never permanently atrophic and pigmented, as in the tertiary lesions

Circinate lesions tend to develop especially on exposed parts in older patients and may closely resemble the annular syphilide frequently seen in the Negro (*see* Fig 240) Other secondary lesions have been described by numerous authors and in the main consist of either a macular eruption with subsequent desquamation or hyperkeratotic papules These lesions have been termed pianides by French authors, as contrasted with the pianomes described above Although they are of interest, too much stress should not be placed on their appearance or non appearance, nor should the diagnosis of yaws be made from them alone as these and similar types of eruption can occur in various tropical dermatoses A painstaking description of all cutaneous lesions attributable to secondary yaws is given by Montel (1944), whose well illustrated publication is recommended for further study

On the palms and soles the typical secondary skin lesions present a somewhat different appearance as they start below the thick stratum corneum and eventually fungate through such lesions on the soles are known as crab yaws In addition more diffuse palmar and plantar lesions have been described in the secondary stage (*see* Fig 241) Either at their initial appearance or during relapses such eruptions are difficult to classify and are frequently confused with the effects of malnutrition In moist areas such as the axillae and groins the lesions of secondary yaws are apt to resemble the condylomas of syphilis Other manifestations of secondary yaws include onychia ganglia about the wrist and hydrarthroses Lesions of the buccal mucous membrane are uncommon but have undoubtedly been observed Bone lesions are frequent and have been the subject of a special review by Hackett They

rarefaction are found resembling gummas and these may eventually ulcerate through the skin Nod s on the skull may occur and diffuse thickening of various bones around the thorax is not uncommon



Fig 243 —Pinta (a) Mexican boy aged 7 years Blue patches were present on the face and (b) Mexican woman aged 30 years The eruption had persisted for 25 years and still showed a few slate blue active areas

(a)



(b)

Gangosa

Gangosa (rhinopharyngitis mutilans) is a special form of tertiary ulceration the manifestations of which vary from a single perforation of the palate to appalling mutilation in the fully developed case (*see* Fig 244)

take the form of rarifying osteitis and periosteal deposits, the commonest clinical appearances produced are those of dactylitis and sabre tibia

The secondary stage lasts on the average from two to three years and during this period, or even afterwards may present single or multiple relapsing lesions

Tertiary stage

This appears at varying times after the onset of the disease it may develop before completion of the secondary stage or there may be an interval of several years latent period before the onset of tertiary lesions They are conveniently classified according to the tissues involved

Cutaneous and subcutaneous—Ulceration of the skin is of frequent occurrence and may take various forms a common manifestation is an area of scarring at the periphery of which there are numerous indolent kidney shaped ulcers with under mined edges Such areas are apt to progress leaving a track of scar tissue with or without keloid formation until a large area h is been involved Other tertiary lesions resemble the cutaneous breaking down gummas of syphilis, as in Fig 242 and



FIG 242—Yaws indolent tertiary lesions on wrist

others again may imitate lupus vulgaris On the palms and soles thickened areas are apt to appear and patchy depigmentation with or without preceding ulceration is commonly seen on the dorsa of the hands and feet

This depigmentation is almost diagnostic in its typical form of treponematous infection It has been observed in tertiary syphilis it has been given the name of marmoriform depigmentation in tertiary yaws when it is often associated with an ichthyotic condition and it is an integral part of the tertiary stage of pinta (*see* Fig 243)

Skeletal system—There is some confusion between the bone changes of tertiary yaws and those produced during the secondary stage Hackett (*1946b*) has given a clear description of the differences In tertiary yaws the lesions are painful and single bones tend to be picked out Radiographically well defined areas of cortical

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FIG 244 —Gangosa (rhinopharyngitis mutilans) in tertiary yaws

Goundou

This is an enlargement of the nasal processes of the maxillary bones and is probably though not certainly a manifestation of tertiary yaws Further enlargement of the para nasal swellings often leads to nasal obstruction

Juxta articular nodes

These non tender fibrotic nodules tend to appear particularly around the elbows and knees but may be widely distributed especially on the extensor surfaces of the limbs this distribution in fact is similar to that of rheumatic nodules They may occur in other conditions besides yaws and too much diagnostic importance should not be attached to them

Visceral lesions

These are rare in areas where yaws flourishes in a florid form If Hudson s views are accepted accounts of their occurrence would be an indication of a transitional

type of treponematosis Such visceral lesions as have been reported in endemic yaws areas comprise aortitis endarteritis and general paralysis of the in ane

Serology and immunology

The Wassermann Kahn and similar reactions become positive in cases of yaws within a few weeks from the onset of the disease During the secondary eruption various authors give the incidence of positive reactions as 80–100 per cent A smaller perc ntage is observed in those cases which have reached the tertiary stage and a still smaller percentage perhaps 25 per cent is positive in so-called latent yaws

The cerebrospinal fluid may show changes at the height of the secondary erup tion pleocytosis and excessive globulin being occasional findings The Wassermann and similar reactions are typically negative in the fluid A high degree of immunity is known to exist between syphilis and yaws but it may not become established until the first infection has been present for some time There is no record of a syphilitic becoming infected with yaws while his first disease is still active but the writer in common with other observers has seen the primary lesion of syphilis occurring in subjects with active untreated tertiary yaws

Histopathology

The outstanding feature of the cutaneous yaws lesion is the predominant affec tion of the epidermis This is thickened and shows elongation of the interpapillary pegs it is infiltrated with leucocytes which may be scattered or aggregated into miliary abscesses and lakes of serous exudate are seen The surface is ulcerated and scabbed in the acute stages and hyperkeratotic in more chronic lesions The corium shows vascularization of the elongated papillae and an infiltration of plasma cells and leucocytes With suitable staining the treponemas are found in large numbers chiefly in the epidermis

The tertiary lesions show involvement of deeper parts of the skin with granula tion tissue and often contain nodular areas with a necrotic centre and successive peripheral zones of endothelial and plasma cells as well as other infiltrating elements The resemblance to a syphilitic gumma is close though the small arteries never show the same amount of involvement

Differential diagnosis

In an endemic area the diagnosis of a definite case of yaws is simple The sporadic case seen on the fringes of the tropics or the very rare instances of yaws in adult Europeans present greater difficulty

Venereal syphilis

The differentiation from venereal syphilis is of some importance as preventive treatment depends on accurate recognition Many of the criteria which have hitherto been accepted and which are still quoted in text books are not strictly accurate for example lesions of the mucous membranes formerly thought unknown in yaws do undoubtedly occur in the secondary stage and the extra genital chancre in syphilis may closely resemble the mother yaw The points on which differentiation should be based are therefore discussed individually rather than tabulated as is usually the custom and an attempt will be made to give each



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disease and will be guided in part by its relative prevalence in the area from which the patient comes The Wassermann reaction is of little help as it is likely to be positive in any endemic yaws area

The tertiary depigmentation of yaws may be confused with vitiligo which how ever is not associated with an ichthyotic skin From leprosy it may be distinguished by the invariable disturbances of sensation and frequent mutilations which accom pany total loss of pigment in the advanced neural case As stated elsewhere the macules of neural leprosy are hypopigmented and not completely depigmented

Treatment

Preventive

When the general hygiene of backward peoples is improved yaws tends to become less frequent The provision of water supplies encouragement of cleanliness with consequent decrease in direct or indirect contamination of small surface abra sions and better clothing and housing (for instance concrete floors which can be conveniently scrubbed) all reduce the chances of fresh infection taking place Nevertheless the most potent factor in reducing the incidence of the disease is the mass treatment of afflicted communities As the disease in its infectious form res- ponds to relatively small dosage whichever of the appropriate drugs is used the number of carriers declines sharply when an anti yaws campaign is carried out and gratifying results ensue

Curative

Until recently the organic arsenicals produced the most efficient results Various dosages have been advocated but it is generally believed that a far shorter course of treatment is necessary to abolish the lesions than in the case of syphilis In the prim ary and secondary stages two injections of neoarsphenamine (0 01 gramme per kilogram of body weight) or Mapharside (0 001 gramme per kilogram of body weight) are usually sufficient to produce rapid disappearance of the lesions but six weekly injections should be given to reduce the chances of re occurrence other authors have advised more prolonged treatment and have suggested that repeated courses as for syphilis should be given This is probably correct as regards permanent cure of individual cases

Bismuth is also effective it is usually given in the form of the subsalicylate or as potassium bismuth tartrate suspended in peanut oil the dosage by weekly intra muscular injection is equivalent to that used for syphilis It is possible too that one of the oral bismuth preparations may prove to be equally effective A longer course of treatment is necessary than is the case with arsenical preparations and lesions do not involute so rapidly An average of five injections is usually required before regression of the lesions is seen

It is necessary for the practitioner to realize that the optimal treatment cannot always be employed among the backward communities in which yaws is especially prevalent This is because patients will not persist with treatment after visible mani festations have cleared up to their satisfaction and partly because few Govern ments can afford the expense of prolonged treatment for thousands of non paying cases A compromise is usually indicated an arsenical is used at the start in order

point its proper degree of importance It must be remembered throughout that comparison is being made between the extremes of two syndromes which have a considerable amount of overlap

Geographical distribution —Although yaws is limited to the tropics syphilis is also extensively distributed in these parts In only a few areas therefore is it possible to state in any individual case that syphilis is an unlikely diagnosis Such areas are rapidly shrinking Nevertheless, syphilis is mainly an urban disease and yaws a rural one, in backward countries yaws depends for its existence on primitive unhygienic surroundings, syphilis is a product of migration to settlements where contact with the foreigner and breakdown of rigid tribal morality are the essential predisposing factors

Age of onset —Infection in yaws occurs in the great majority of cases before puberty In venereal syphilis the primary lesion usually occurs after puberty

Site of the primary lesion —This is usually extragenital in yaws, the converse being true of syphilis Too much importance should not be attached to the clinical appearance of the primary lesion for the extragenital syphilitic chancre is usually not indurated and the primary yaw can be indurated when it occurs on the genitalia

Congenital yaws —The fact that this condition is unknown must be considered in differential diagnosis

Tertiary lesions —In late yaws certain tissues are rarely if ever affected these comprise the central nervous system, the eyes the heart and large arteries, the liver and the testes

Character of the secondary eruption —When typical this is of great value in differentiation but it must be remembered that some of the pianides may closely resemble the lesions of secondary syphilis and conversely that syphilis in the Negro has a tendency to produce flamboyant lesions which may be framboesiform or may closely imitate the circinate lesions of yaws

Histological examination —The histological examination of tissues often serves to differentiate the diseases though expert knowledge is required

Other conditions

Other conditions which may be confused with the secondary eruption of yaws are certain forms of blastomycosis and bromide eruptions microscopic examination is essential in the first case and a history of drug administration will be obtained in the second Where yaws occurs the chances of any dermatosis, other than syphilis being confused with its secondary stage are slight

In the tertiary stage the lesions of American leishmaniasis (espundia) may be confused with gangosa if there is any doubt the causal organism must b sought Juxta articular nodes are frequently seen in syphilis and may be closely imitated by the cystic swellings of onchocerciasis aspiration of these will reveal microfilariae

Tertiary lesions of the palms and soles are frequently confused with the appearances found in pellagra and with certain non specific forms of dyskeratosis frequently both yaws and pellagra coexist and in other cases there is no single reliable criterion of differentiation The practitioner must search for other evidence of either

It is possible that with increasing knowledge these descriptions may have to be amended

Geographical distribution

Pigmentary disturbances occur in the tertiary stage of any of the varieties of treponematosis hence it is difficult to state dogmatically that pinta is limited to certain regions and that cases of so-called pinta described outside America are not cases of tertiary syphilis or yaws with unusually pronounced pigmentary disturbance Such cases have been seen in many parts of the tropics and subtropics

In the New World the disease is widespread over a large continuous area extending from the southern third of Mexico to northern Argentina including many of the West Indian islands The boundaries of this area practically coincide with the tropics as do those of yaws in Africa Over a million persons are said to be affected

Aetiology

The majority of cases contract pinta in childhood or adolescence the sexes being affected equally Congenital cases are not known The disease is rare in white persons and commonest among rural populations living in unhygienic circumstances Certain areas particularly along river valleys show a disproportionately high incidence Infection is believed to be by direct contact in most cases but there is evidence that insect vectors may sometimes be concerned

The causal organism has received several names those of *Treponema carateum* and *T herrejoni* being most commonly used It is morphologically identical with the treponemas found in cases of syphilis yaws and similar diseases but so far attempts at animal inoculation have been unsuccessful

Clinical manifestations

Primary lesions

The primary stage which may last up to a year is marked by the development of a papule at the site of inoculation usually on some uncovered part of the body after an incubation period of 1–3 weeks Gradually this papule becomes larger and flatter and is transformed into an erythemato squamous patch of variable size and shape Similar lesions may appear at the periphery of the initial lesion and coalesce with it

Secondary stage

In the secondary stage which supervenes some 6 months after infection similar lesions appear with a generalized distribution at this stage the primary lesion is often indistinguishable from these so-called pintids The appearances of this exanthem are variable and the eruption may be lichenoid or suggestive of tinea corporis psoriasis or syphilis The majority are erythemato squamous and ulceration is never seen

Tertiary stage

Skin lesions of the tertiary stage consist of various ichthyosiform and atrophic changes including keratodermia of the palms and soles, and the characteristic

to procure a dramatic response and bismuth injections which are cheaper are then given for a period usually limited by the patient s non return For example, one may give an intravenous arsenical and intramuscular bismuth injection at the first two weekly attendances and continue with weekly bismuth for four further injections if the patient attends so long *It is of course impossible to say what the* relapse rate is under such conditions but the success of anti yaws campaigns conducted with similar dosages and followed up for several years suggests that this method is reasonably satisfactory for mass treatment

Penicillin has recently been used and has given remarkable results Hill, Findlay and MacPherson (1946) advise that 100 000 units in an oil and bees wax vehicle be given intramuscularly daily for ten days Their immediate results were even more prompt than with arsenical therapy, but there was a small relapse rate and the effect on the Kahn reaction was apparently not superior to that of previous treatments Arje (1947) has also reported from the Pacific that a single dose of 300 000 units of penicillin in bees wax and oil administered to a large number of infected persons has materially reduced the infection rate of yaws

Tertiary lesions do not respond so satisfactorily as earlier manifestations and it is probable that, as in the case of syphilis prolonged treatment with the additional use of iodides is necessary, this is rarely feasible among tropical populations Penicillin is of special use in procuring a quick remission of symptoms

According to Chambers (1944) juxta articular nodules respond equally well to therapy with arsenic and bismuth he states that smaller nodules of less than three years duration may be expected to disappear within a year

Prognosis

Yaws is not a direct cause of death, but if untreated it may lead to mutilation and disability Adequate treatment always produces excellent results in the earlier stages With far smaller dosage the outlook in yaws is much better than in syphilis

BEJEL

Hudson (1936) first described a condition in the Arabs of the Syrian desert which bore a close resemblance to syphilis in its cutaneous and mucous membrane lesions and yet resembled yaws in that among rural populations the disease was contracted in childhood in a non venereal manner The disease is caused by a treponema indistinguishable from those of syphilis and yaws and the serological reactions are also similar Mucous membrane lesions of the secondary stage are found more commonly than in yaws but the bone lesions as described by Rost (1942) were comparable with those seen in yaws and syphilis It is essentially a non venereal syphilis of desert Arabs who themselves distinguish it from the more orthodox syphilis contracted in the towns

PINTA

The name pinta (*mal del pinto carate* tina) was formerly applied only to the tertiary stage of a variety of treponematosis which is especially prevalent in parts of the American continent It is only recently that the true nature of the disease has been discovered, and descriptions of the primary and secondary stages published

differentiate especially when serum reactions cannot be performed or in cases in which another variety of treponematosis coexists The presence of slate blue patches and of atrophic or scaly areas in pinta should be of assistance

Treatment

This is given as for other varieties of treponematosis and results are excellent The positive serology and depigmented areas of the late stage are however irreversible

LEPROSY

This the oldest known and the most dreaded affliction of mankind still has its millions of victims Although it is today principally a disease of the tropics and sub tropics leprosy was formerly widely spread in Europe where even to-day small endemic areas survive The scope of this work hardly permits of too elaborate a treatment of the subj ct hence the following account stresses principally the practical aspects of diagnosis infectivity and prognosis and merely mentions pathology and treatment for the sake of completeness it is felt that these are now adays mostly the work of specialists and that the few general practitioners who may be called on to und rtake them will have access to more specialized publications

Geographical distribution

The disease seems to have originated in western Asia and to have spread from there The most recently infected areas are in the Pacific the New World was free from the disease until the importation of African slaves Europe became infected both by the returning legions of Rome and far more intensely by the Crusaders

Europe —The fringe of the Mediterranean southern Russia the Scandinavian countries and Iceland between them account for some thousands of cases Apart from these areas it may be assumed that ca es of leprosy seen in western Europe are invariably imported

Africa —No part of this continent is free but the highest incidence is roughly at the level of th equator Leprosy is also particularly prevalent in Egypt and Madagascar

Asia and Oceania —The southern part of Asia is severely affected India and China show an especially high incidence but the disease is also commonly seen in all parts from the Levant to Japan The Philippine Islands the East Indies Hawaii and the southern Pacific islands are all endemic areas

The Western Hemisphere —A maximum incidence is shown in the tropical belt with sporadic cases in such parts as the southern United States

Aetiology

The disease is due to infection with the *Mycobacterium leprae (Bacillus leprae* Hansen) In the vast majority of cases prolonged and intimate contact from two years upwards with infectious lepers has preceded the onset of the disease and many months or years of incubation thereafter may be required Children are more

pigmentary changes These dyschromias are so arresting that they monopolized the attention of investigators for many years and led to the initial stages being over looked

As pointed out by Mandoul and Mandoul (1942–43) all the pigmentary disturbances are ultimately referable to two factors the distribution of melanin and the degree of erythema Appearances formerly dignified by separate names, such as red, brown, blue or white pinta are therefore no longer of clinical significance When pigment is located in the corium it gives a blue coloration to the skin as exemplified by the Mongolian spot, in the epidermis it produces various shades of brown its absence leaves a white area and this in the presence of active congestion is pink or red

The patches are irregular in outline of various sizes and distributed haphazardly In some cases pigment is preserved in islands and a reticulated appearance produced The end result is usually a fairly symmetrical depigmentation affecting chiefly the extremities, and patches of slate blue pigmentation distributed elsewhere These latter are probably evidence of persisting activity favourite sites for these according to Fox (1944), are the face waistline and trochanteric region (see Fig 243)

Apart from the cutaneous changes infection of the central nervous system may result in abnormalities of the cerebrospinal fluid the heart and aorta are also frequently affected in the tertiary stage of pinta Adenopathy and justa articular nodes, likewise have been reported

Histopathology

The main points to be observed are a shift of pigment from the epidermis to the corium an atrophy of the epidermis and a cellular infiltrate located principally around diseased blood vessels Using suitable stains treponemas may be demonstrated principally in the epidermis in all active cases

Serology and immunology

As the disease evolves the Wassermann Kahn and comparable reactions of the blood become positive in an incidence of from 60 per cent in early cases to 100 per cent in the late stage The positive reaction is said to be irreversible, even in treated cases There is no cross immunity between pinta and syphilis and reinfection of pinta patients can take place either after therapeutic cure or spontaneously after the disease has been present for some time Several workers have found changes in the cerebrospinal fluid including positive Wassermann and Kahn reactions in varying percentages of cases

Diagnosis

All erythemato squamous and dyschromic eruptions seen in an endemic area should suggest pinta This diagnosis is further supported by a positive Wassermann or Kahn reaction and confirmed by identifying the causative organism when laboratory facilities are available the treponemas can be found in all but the very late stages of the disease Cases of vitiligo in an endemic area may be difficult to

TABLE

CHIEF DIFFERENCES BETWEEN MAIN GROUPS OF LEPROSY

	Lepromatous	Neural
Predominant skin lesions	Infiltration plaques nodules Raised centre Indefinite margin	Ma ulc clear-cut margin may have raised edge
Pigmentary changes	Uncommon	Invariable
Anaesthesia	Incidental	Always present in ome mac ules or in areas supplied by ulnar or peroneal nerves
Visceral ocular and laryngeal involvement	in later stage	–
Acute neuritis	+	+
Palsies	With acute neuritis and in later stages	Progressive and chronic
Trophic changes	Only in later stages	+
Febrile reactions and erythema nodosum		–
Myco leprae in skin scrapings		Usually absent
M co leprae in nasal smears	Common	Rare
Lepromin test	–	+
Infectivity	–	Slight
Prognosis	Bad	Relatively good

Lepromatous type

In this type the skin and almost all other organs are invaded with enormous numbers of *Myco leprae* Cutaneous infiltrations are the outstanding characteristic as these may be localized or diffuse the clinical picture will vary from indefinite thickenings to frank nodules After the incubation period which lasts for months or years the first sign appears usually as a cutaneous lesion this may be single or multiple from the beginning It may be preceded accompanied or succeeded by fever malaise bone pains and other symptoms suggesting an acute allergic reaction Such lepra reactions recur and are an integral part of the disease process they are frequently accompanied by an allergic type of skin reaction usually erythema nodosum or erythema multiforme but occasionally simply erythematous urticarial r rysip loid

The cutaneous lesions may begin as macules in which sensation is preserved, but they rapidly show elevation chiefly of the centre and take the form of plaques or

susceptible to infection than are adults, but the transmission of leprosy *in utero* is practically unknown The male sex is affected about twice as often as the female

Poverty and ignorance are potent predisposing causes these act in various ways—opposition to segregation of infectious relatives, malnutrition and lack of cleanliness are probably the main factors In these respects as well as in others leprosy and tuberculosis show a striking resemblance Apart from the operation of these factors there is little evidence of any racial predisposition nor has the question of personal immunity and susceptibility been satisfactorily determined

The mode of infection is also undecided some cases have undoubtedly been infected directly from lepers through minor breaches of the skin surface The inhalation of dust containing *Myco leprae* and the transmission of the bacteria by flies, lice and bed bugs have been the subject of inconclusive speculation

Mycobacterium leprae

This organism resembles *Myco tuberculosis* in appearance and staining reactions There is some doubt as to whether it has ever been cultured few successful attempts at animal inoculation have been reported and these still await confirmation Diagnosis from smears examined microscopically cannot therefore be confirmed by other bacteriological methods and great responsibility may be attached to the examination, it behoves the practitioner who may be called on to examine slides from doubtful cases to acquaint himself thoroughly with the staining reactions employed Acid fast bacilli can be recovered from nasal smears of normal persons and the technique of alcohol decolorization must therefore be meticulously observed

Lepromin an extract of lepromatous tissue rich in bacteria which have been inactivated by heat is the nearest approach to a vaccine which has been elaborated Though not used therapeutically it is of some use in diagnosis, in the differentiation of the types of leprosy

Classification

Although there is some difference of opinion regarding classification cases are customarily differentiated into lepromatous and neural The latter group includes the tuberculoid reactions which may or may not yield *Myco leprae* on scraping A third indefinite or uncharacteristic group includes cases formerly called mixed which may in some instances represent a change over from the neural to the lepromatous type The accompanying table is designed to show the chief distinctions between the main groups Some of the particulars may not apply unequivocally in every case but a consideration of all the factors should help in classification

Consideration of the last two items will explain the practical importance of accurately classifying a given case

Clinical manifestations

It is proposed to describe the lepromatous and neural types separately indefinite cases will be found to have characteristics belonging to both groups and neural signs invariably occur in the terminal stages of lepromatous leprosy

While lepromas are forming in the skin similar lesions are being produced else where Rhinitis with ulceration destruction of cartilage and deformity (saddle nose) is frequently an early manifestation Recurrent attacks of iritis eventually leading to blindness are also common and frequently coincide with lepra reactions Involvement of the lymphatic system is often seen and obstruction leads to gross oedema sometimes assuming elephantiasic proportions with secondary verrucose changes in the skin The lymphatic glands are usually palpable though not tender and may show considerable enlargement The larynx may be the site of extensive damage which leads to aphonia and eventually stenosis with stridor and secondary cardiac and pulmonary complications these in their turn are among the common causes of death The nervous system is typically affected by acute neuritis with pain areas of anaesthesia (not coinciding with the distribution of the cutaneous lesions) mutila tions and paralyses such as foot drop Enlargement of the spleen and liver is regularly found and involvement of the testes is also common causing among other manifestations frequent gynaecomastia

The duration of lepromatous leprosy varies greatly according to the physical state of the patient and the nursing attention he receives The course probably averages 6–10 years and is apt to be irregular owing to relatively quiescent periods alternating with lepra reactions and successive involvement of fresh tissues Death occurs from complications pneumonia heart disease tuberculosis nephritis amyloidosis and septicaemia are the commonest

Neural type

This is to be regarded as the benign variety of leprosy in which the patient s resistance is high bacteria are difficult to recover infectivity is comparatively slight and the prognosis is relatively good

The first visible lesion is the macule (Fig 246) which may develop rapidly either singly or in large numbers The macule is usually hypopigmented (not d pigmented) but may show hyperpigmentation At various stages during its development the macule may undergo a tuberculoid reaction becoming erythematous and raised—especially at the periphery—and in rare instances may yield scanty *Myco leprae* on scraping (Fig 247) It is at this stage that the neural type of leprosy is apt to be confused with the lepromatous but the margin of the macule is clear-cut its outline may be circular oval or irregular and festooned figures are frequently produced by the coalescence of several macul s As the macule ages recovery is apt to occur at the centre and spread towards the edges such recovery may be accompanied by regeneration of pigment

The siz of the macule varies at its first appearance or by extension it may attain large dimensions diameters of over one foot b ing not uncommon Other macules may remain small throughout their stages of evolution and disappearance

Anaesthesia is the essential sign of the neural type of leprosy it may occur in areas not the site of macules and it may not be found in all the macules but some of them invariably show changes of sensibility It must be rememb red that anaesthesia and analgesia are not interchangeable terms and that sensation to pin prick is often preserved when light touch is no longer p rceived and th rmo-anaesthesia is present

nodules During resolution these plaques may again become macular such macules do not show the clear cut margin typical of the neural macule which is described later In some cases the plaques are ill defined and an appearance of diffuse infiltration, thickening of the skin and coarse furrowing is produced This is especially the case where the face is affected, and marks an early stage of the well known leonine facies (Fig 245) The sites first affected are usually the forehead cheeks, ears and thighs, but any part of the cutaneous surface may be involved In the dark skinned races the plaques are usually somewhat lighter than the surrounding skin but become erythematous as they become elevated in the European they are apt to be dusky red or even bluish These plaques often disappear without



Fig 245 —Lepromatous leprosy

treatment and may successively affect almost the whole surface of the body as they disappear they are apt to leave patches of pigmentation Loss of the eyebrows beginning at the outer third is a frequent accompaniment of lepromatous infiltration of the forehead and is a useful diagnostic sign As the disease progresses plaques may become nodular or may ulcerate These ulcerated nodules especially when occurring on the legs produce lesions closely resembling those of tertiary syphilis or yaws such ulcers shed myriads of *Myco leprae* in their discharge and are probably a potent source of infection

Another sign is the enlargement of nerve trunks those most easily felt being the posterior auricular (Fig 248) ulnar and peroneal These may be palpated as thickened cords often with a cartilaginous feel the enlargement may be irregular fusiform or nodular swellings being frequent Macules are especially apt to occur in the distribution of the affected nerves

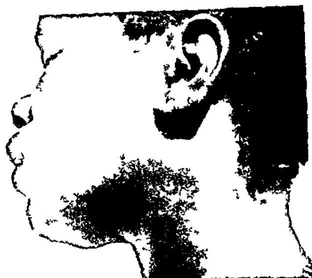


Fig 248—Neural leprosy showing enlarged auricular nerve

Motor changes occur during the course of the disease and wrist drop or foot drop and facial palsies are frequent while the well known leper claw (*main en griffe*) follows involvement of the ulnar nerve Trophic changes ensue especially during the phase of healing when fibrosis takes place in the affected nerves The appearance of bullae on the extremities is sometimes the first sign these break and leave indolent ulcers When such ulcers have healed absolute depigmentation ensues in contrast to the hypopigmentation of the macule Perforating ulcers of the soles are often seen and other deformities result from the absorption of tissues for instance of the digits it is not uncommon to find that these have disappeared almost completely leaving the nails perched on small projections at the site of the former metacarpo phalangeal joints The skin generally is apt to show signs of malnutrition and appearances which are often considered typical of chronic pellagra are seen in neural leprosy

The progress of neural cases is slow and irregular spontaneous resolution of some macules may take place while others are erupting Tuberculoid reactions may occur at intervals as described above and the differentiation of these from lepromatous plaques may present some difficulty as lepromatous leprosy may supervene on the neural type The presence of *Myco leprae* in skin scrapings is of some value in differential diagnosis but may occur in the tuberculoid reaction Much experience and repeated examination of the patient are necessary in doubtful cases It



FIG 246 —Neural leprosy hypopigmented macules in a Negro



FIG 247 —Neural leprosy tuberculoid reaction

therefore of no practical value in the diagnosis of neural leprosy If bacterial confirmation is required in such cases Davison (1943) advises incision of the perineurium of a thickened nerve followed by scraping *Myco leprae* are sometimes found by following this technique

The histamine test is of value in some cases It depends on leprous involvement of terminal nerve fibres and consequent abolition of the axon reflex Pricking through a drop of 1 1 000 histamine solution produces erythema and wealing in the normal skin In the macule of neural leprosy erythema is often not elicited whereas weal formation still takes place The test should always be controlled by a precisely similar puncture on normal skin outside the suspected macule It should be remembered that this test only serves to distinguish lesions in which degeneration of nerve fibres has taken place it would be equally negative in areas of nerve degeneration from any other cause for instance alcoholic peripheral neuritis

Differential diagnosis

So many dermatological conditions are apt to be confused with leprosy that an exhaustive list of such diseases would be inordinately long but provided that three important facts are constantly borne in mind there is little likelihood of confusion in the great majority of cases of leprosy These three facts are

(1) *Myco leprae* can always be recovered from the lepromatous case

(2) Some macules of neural leprosy always show anaesthesia of some degree

(3) The loss of pigment in macules is always partial never complete

Syphilis

Confusion with syphilis is the commonest error and is often accentuated by the frequency with which false positive serological reactions (Wassermann and Kahn) occur in lepromatous cases However the only lesion of leprosy which has more than a superficial resemblance to syphilis is the lepromatous ulcer of the leg these are often extensive multiple punched-out indolent and dirty and may be clinically indistinguishable from broken down gummas The profuse outpourings of *Myco leprae* in conjunction with the presence of lepromatous lesions elsewhere—especially on the face and ears—usually serves to distinguish them Nevertheless leprosy and syphilis may be present in the same patient and in such cases it may be difficult to decide to which disease certain lesions should be attributed Resemblance to syphilitic alopecia of the eyebrows and tertiary syphilitic involvement of the larynx may cause similar difficulty but careful examination of the patient and consideration of all the lesions present will usually suffice to draw attention to lepromatous leprosy which may then be confirmed bacteriologically

To the inexperienced the macular lesions of secondary syphilis may raise a suspicion of leprosy similar errors have been made with regard to pityriasis rosea and pityriasis versicolor (especially the variety known as achromia parasitica) Apart from the invariable absence of anaesthesia in these conditions the relatively uniform size of the lesions as well as their distribution and in most cases their colour should prevent confusion

must again be emphasized that trophic changes are a sign of healing and that patients with these are rarely infectious their prognosis so far as life is concerned is good

Diagnosis

Lepromatous leprosy

The identification of *Myco leprae* is the cardinal confirmatory measure in this type of the disease When plaques, nodules or infiltrations are presented Wade s *scraped incision is the method of election* with a sharp scalpel an incision about half an inch long is made through the epidermis and upper part of the corium, the blade is then turned through an angle of 90 degrees and the cut edges are scraped These scrapings are transferred to a slide fixed by drying stained by the Ziehl Neelsen method (including decolorization with both acid and alcohol) and examined with the oil immersion objective The majority of lepromatous cases yield large numbers of bacteria if this technique is used

Taking of nasal smears —The nasal smear is frequently advised and in proper hands may be of diagnostic value Faulty technique is however, too common and the method if attempted at all should be employed in the following way ideally a nasal speculum is used to locate ulceration in the nasal cavity (frequently on the septum) and scrapings are taken from such ulcers with a sharp spoon This however is not always possible nor are ulcers invariably to be found, and the swab *must then be used Simply collecting mucus on the swab is of no value*, the nasal cavity must first be cleansed of mucus and then the mucosa is firmly stroked with a swab until a trace of blood appears on the cotton wool From this specimen a smear is prepared and examined Bacteriological technique must be especially rigid as otherwise diphtheroid organisms common in the nose may be confused with *Myco leprae*

The place of this and other laboratory tests must not be abused the clinical diagnosis is still of paramount importance and the finding of bacteria should never constitute more than confirmatory evidence Davison (1943) has drawn attention to the dangers of diagnosing leprosy simply on the strength of a positive nasal smear or of the presence of acid fast bacilli (for example acne bacilli) in pustular lesions

Lepromin test —The lepromin test is of some value when there is doubt regarding the classification of a case for instance when tuberculoid *reactions occur* in the neural type A negative lepromin test in such circumstances is strongly in favour of lepromatous leprosy *A positive lepromin reaction may* occur (possibly as a sign of immunity) in non lepers and is therefore of no diagnostic significance *per se*

Neural leprosy

In this type anaesthesia is the cardinal sign and should be looked for most carefully not only should several macules be tested but anaesthesia to light touch and temperature should be looked for as well as analgesia to pin prick

Bacteria are inconstantly present in small numbers in macular lesions especially during phases of tuberculoid reaction Skin scrapings and nasal scrapings are

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Curative measures

Opinions are still divided regarding the efficacy of the various substances recommended at one time or another as cures for leprosy Details of such treatments are outside the scope of this contribution one may however mention the use of chaulmoogra oil intramuscularly and intradermally and of antimony or arsenic during the tuberculoid stage of neural leprosy It should be remembered that this relatively benign type frequently becomes stationary when proper individual care is given to the patient Until recently the treatment of the lepromatous case was regarded as hopeless beyond such measures as could be undertaken to relieve the most distressing symptoms The introduction of sulphone drugs (Promin Diasone Sulphetrone and Promizole) now leads one to hope that chemotherapy may ultimately achieve a cure in this previously fatal condition Even now according to Faget (1947) these drugs must be considered the optimal treatment of leprosy

Faget and his co workers (1943) have reported encouraging results from the use of Promin by mouth and Muir (1947) has had similar experience in lepromatous cases using Diasone intravenously and orally This author advises the following scheme of dosage Promin may be given intravenously in daily doses of up to 5 grammes Diasone is given by mouth in 5 grain (0 32 gramme) tablets commencing with 1 tablet daily and increasing until 3 tablets are taken daily for 6 days a week This dosage is then continued for a period of 3 weeks in every month

The pain of leprous neuritis may be very severe and the use of morphine is to be avoided as far as possible in this as in other prolonged and painful illnesses Pogge (1944) has recently obtained satisfactory results with the intravenous use of calcium gluconate in such cases as do not respond to routine analgesics

Apart from attempts at finding a specific cure for leprosy attention to nutrition personal hygiene and the treatment of intercurrent disease are of great importance These measures alone may produce arrest to neural cases and can do much to alleviate the lot of the lepromatous leper

GRANULOMA VENEREUM

Definition and geographical distribution

Granuloma venereum (granuloma *inguinale* or ulcerating granuloma of the pudenda) is a chronic granulomatous ulcerative venereal affection of the genitalia and other parts The tropics and subtropics are endemic regions The disease is not uncommon in the southern United States especially in Louisiana

Aetiology

The disease affects adults of both sexes and shows a specially high incidence in the coloured races It is transmitted by sexual intercourse Although final proof is still lacking the so called Donovan bodies are usually regarded as the causative organisms They belong to the group of capsulated bacilli and have a close morphological resemblance to the bacillus of Friedlander

Clinical manifestations

The earliest lesion which may occur on any part of the pudenda or adjacent surfaces appears from a few weeks to a few months after intercourse with an

Yaws and pinta

The above remarks apply equally to the ulcerative lesions of yaws In the later stages of this disease as well as in pinta, the cutaneous atrophy and depigmentation may suggest trophic lesions of leprosy these may however, be confidently excluded by the negative neurological findings Neural leprosy can similarly be differentiated from vitiligo and secondary leucodermia by remembering that the macule of leprosy is hypopigmented not depigmented

Syringomyelia

The claw hand anaesthesia and *mutilations of leprosy may be confused with* syringomyelia, in this condition, however, cutaneous manifestations are absent elsewhere and there are no palpable thickened nerve trunks Further as the peripheral nerve fibres are not degenerated, the histamine test may usefully be employed in the differential diagnosis

Lastly, certain dermatoses which occur frequently in lepers should always prompt a search for other manifestations of leprosy when they are encountered in endemic areas These comprise erythema nodosum, elephantiasis and trophic changes of the skin, especially of the legs and feet, suggestive of vitamin B complex deficiency

Histopathology

The essential difference between the two types of leprosy is well seen histologically In the lepromatous case the characteristic lepra cells are present in great numbers, these are probably degenerated histiocytes whose cytoplasm is vacuolated and often infiltrated with fat With suitable staining they may be seen loaded with acid fast bacilli in various stages of degeneration such collections of bacilli are referred to as globi There is a relative paucity of inflammatory infiltrate and these two facts serve to differentiate the leproma from other granulomas

The neural case shows various changes from non specific mild inflammatory reaction to the tuberculoid type of change In the latter there is often a close resemblance to sarcoid structure and this appearance may also be seen in affected nerves *Myco leprae are absent from such lesions or more rarely may* be found after a prolonged search

Treatment

Prophylaxis

As lepromatous cases are the essentially infectious ones every effort should be made to procure their segregation This applies especially to lepromatous parents whose children will almost certainly become lepers unless removed from their parents at birth or soon after In most countries where the disease is endemic however, the identification and isolation of all infectious lepers is impossible Nevertheless raising the general standards of health and education will be of eventual service as the disease flourishes chiefly among backward and unhygienic populations The recent decline in the incidence of tuberculosis in many Western countries where nutrition health and education have been improved affords a striking parallel

this Lymphangitis and regional adenitis may ensue and there may be slight temperature Satellite vesicles are apt to develop around the primary lesion Subjective symptoms early itching and later pain are not marked unless adjacent lymphatics or cellular tissues are involved

If untreated the lesion may persist up to three months while others are developing The end result is a smooth pliable scar the appearance of which varies according to the individual being pink in the fair haired and tending to be violaceous or pigmented in persons of brunette colouring

A special variety of bullous lesion having the same distribution and terminating in ecthyma has been observed by the writer in numerous cases both in the Middle East and in South Africa The following details are thought to be relevant

(1) A bulla can be produced within a minute by slight trauma such as a rap over the knuckles

(2) The contents (before rupture) are sterile

(3) In a few cases the sterile contents produced similar lesions after an interval of three days when injected into a previously sun exposed area but not when a protected area was used Control injections with sterile saline were negative

(4) Over 90 per cent of the cases had a history of frequent attacks of herpes simplex lasting for many years

It is believed that these cases are due to the implantation of herpes simplex virus in skin previously conditioned by sun-exposure

Diagnosis

The multiplicity and distribution of the lesions together with the frequent occurrence of lymphangitis and adenopathy are fairly typical Dermal leishmaniasis usually presents a solitary lesion which is more indurated than the ecthymatous sore Cutaneous diphtheria tends to produce lesions with a sharper edge and an adherent slough which varies in colour from yellowish brown to greyish black anaesthesia of the surrounding skin is frequently present Meleney s ulcer due to micro aerophilic streptococci is not often seen on the forearms and hands it is larger and deeper than the ecthymatous sore and the edges are more extensively undermined

Treatment

Individual lesions respond well to cleansing and the application of routine antiseptics followed by occlusion penicillin produces rapid recovery when locally applied Sulphonamides and flavine though effective should not be used when other remedies are available owing to their tendency to produce local and generalized sensitivity Although most cases clear up promptly one meets with patients who develop fresh lesions in spite of scrupulous cleanliness and prompt attention to all minor injuries In these cases the use of an autogenous vaccine is often of benefit

CUTANEOUS DIPHTHERIA

This condition is relatively prevalent in the tropics especially under campaigning conditions As long ago as the Boer War *C diphtheriae* was occasionally found

cutaneous lesions and may themselves form the portal of entry for other specific infections such as diphtheria Pyosis tropica is similarly a term coined to include various pyodermias commonly seen in but not confined to, the tropics It too has numerous synonyms such as pyosis mansoni and Nile boil A special variety of pyodermia was seen in both World Wars in the Middle East campaigns and was known as desert sore, it affected principally fair skinned and red headed individuals

Geographical distribution

This cannot be defined with exactness as the group of conditions to be described are seen in all parts of the world though more frequently in regions where dry heat is experienced The Transvaal and Free State in South Africa North Queensland in Australia, Egypt and Libya have the reputation of providing large numbers of cases

Aetiology

The condition affects chiefly children and young adults especially males who by reason of their occupation perspire freely and are subject to minor trauma of the skin Numerous species of streptococcus and varieties of *Staphylococcus aureus* have been incriminated The former are more commonly isolated from the non follicular lesions *Corynebacterium diphtheriae* is found in rare instances only, and then as the result of superinfection

Clinical manifestations

Cases of pyogenic folliculitis or furunculosis differ from non tropical cases only *in their severity and resistance to treatment* individual lesions when broken may develop into ecthymatous sores

Bullous impetigo in the tropics frequently involves the lower parts of the axillae and other areas where sweating is profuse According to Sulzberger (1945) the causative organism is a haemolytic *Staph aureus* and the early histology of individual lesions is related to that of prickly heat It may be recognized by the appearance of numerous flaccid bullae the contents of which tend to separate into layers the heavier constituents forming a turbid sediment above which a clear supernatant fluid layer may be seen

Tropical acne is a particularly severe pustular eruption affecting the sebaceous glands and probably analogous to prickly heat

Commoner types of pyodermia

The commoner type of pyodermia corresponding to the desert sore has been well described by Macrae (1944) by Anning (1944) and by Bettley (1943) Apart from secondary infection of cuts abrasions and insect bites there is a well defined entity, reminiscent of superficial impetigo This is nearly always situated on an exposed part usually the back of the hands or forearm or about the elbow The primary lesion is a round or oval flaccid intra epidermal bulla with turbid or blood stained contents surrounded by a zone of erythema The lesion grows within a day or two until a diameter of about one inch has been attained By this time the bulla has ruptured, disclosing a raw red base extending beneath the undermined edges About the third day a crust forms and pus may be expressed from beneath

per cent acetic acid the condition clears in a few days Other antiseptics including penicillin are useless in the treatment of this condition

VERRUGA PERUANA

This exanthem strictly limited to parts of South America is the result of infection with a rickettsia like organism known as *Bartonella bacilliformis* The skin manifestations are one stage in the febrile syndrome known as Oroya fever and when profuse are said to indicate a benign prognosis The lesions themselves are miliary or nodular with a tendency to become haemorrhagic the former have a centrifugal distribution and may affect the mucous membranes the latter have a tendency to fungate and may initiate severe haemorrhage No specific curative treatment is known

RICKETTSIAL AND VIRUS INFECTIONS

The cutaneous manifestations of certain tropical fevers such as dengue are not strictly within the scope of a dermatological work Certain eruptions however may be unfamiliar to the practitioner who is new to warm climates and should at least be mentioned The rickettsial infections are all able to produce macular



Fig 250 —Primary lesion of tick borne typhus

papular or petechial rashes which when encountered along with the constitutional signs and symptoms should be an aid to diagnosis The initial lesion however which occurs in many cases of mite borne and tick borne typhus and which may precede the febrile stag should be familiar to those who practise in endemic areas The Mediterranean form (*fièvre boutonneuse* Marseilles fever) affords a good example after a few days the site of the bite of the infected arthropod presents a papule which rapidly ulcerates and frequently becomes covered with a characteristic black eschar (*la tache noir*) as seen in Fig 250 The regional lymph glands enlarge

associated with *veldt sore* and this observation was repeated in the case of desert sores in both World Wars

Aetiology and diagnosis

It is probable that *C diphtheriae* is a secondary invader in all cases supervening on other forms of pyodermia Lesions may be single or multiple and may affect any part of the integument Their appearance is often diagnostic when established they present a punched out ulcer, often rectangular or irregular in outline with an adherent membrane which is first yellow, but later becomes brown or black Such ulcers are usually only slightly painful and careful examination often reveals anaesthesia at some part of the periphery This is a diagnostic sign of cardinal importance far outweighing the often inconclusive results of bacteriological investigation Further evidence of local nerve involvement is sometimes seen in the persistent fibrillation of underlying muscles The Schick test usually remains weakly positive after cutaneous diphtheria

Complications

In an unknown but relatively small percentage of cases of cutaneous diphtheria complications ensue Polyneuritis has been described in most instancesand may be associated with transient paresis of accommodation Pain is usually not marked a lower motor neurone type of paralysis being typical This is usually symmetrical but in some cases the limb which carries the causative ulcer may be more severely affected Peripheral neuritis due to diphtheria always recovers completely within twelve months Myocarditis has been found in a few cases of cutaneous diphtheria and, very rarely has been a cause of death

Treatment

Treatment is unsatisfactory according to Ward and Mason (1945) the untreated lesion heals in from 4 to 17 weeks the average time being 8 weeks Personal experience of various forms of therapy has not convinced the writer that this time can be materially reduced It is however customary to give an injection of diphtheria antitoxin, and dressings of the antitoxin have also been used Penicillin has no specific effect either when applied locally or given in injection When the ulcer is particularly chronic and indolent, healthy granulations may follow daily application to the base of dressings moistened with sterilized ox bile, a method originally devised by Doucet (1940) for the treatment of phagedaenic ulcer Complete bed rest for 6 weeks, as for faucial diphtheria is insisted upon

PYOCYANEUS DERMATITIS

A hitherto undescribed dermatosis follows infection of the skin with *Pseudomonas pyocyanea* The writer has so far seen it only in tropical climates It manifests itself by the sudden appearance of giant, flaccid bullae around a trivial wound these bullae rupture quickly and leave a ruby red, glazed surface partly covered with shreds of epidermis The condition spreads so rapidly that a whole limb may be affected in a day or two If facilities for culture are not available, the diagnosis may be made by observing the typical green discharge on compresses of normal saline, antiseptic applications usually disguise the colour Under compresses of one

CHAPTER 36

NON COMMUNICABLE DERMATOSES ESPECIALLY COMMON IN WARM CLIMATES

L J A Loewenthal

CUTANEOUS MANIFESTATIONS OF MALNUTRITION

Our knowledge is as yet insufficient to attribute a precise clinical picture to the deficiency of each specific food factor Formerly it was thought that certain dermatoses must necessarily follow deprivation of certain vitamins though this is true in many cases it is not a universal law and many workers have shown that similar cutaneous changes in man and in experimental animals can follow deprivation of different food factors It is as though the normal metabolism of the skin were a chain reaction and that interruption of any link of this chain caused a similar breakdown and hence a similar dermatosis When dealing with human material furthermore it is rare to find in natural surroundings a deficiency limited to one factor only clinical descriptions are therefore apt to apply to multiple deficiencies and the treatment of most cases of nutritional dermatosis is usually more effective when more than one supplementary substance is added to the diet

A further difficulty arises from the fact that numerous skin diseases which are certainly not the result of malnutrition of the patient respond to doses of vitamins when these are given far in excess of normal therapeutic requirements Examples of this are given by pityriasis rubra pilaris and Darier s disease which often improve with vitamin A therapy by lupus vulgaris which may respond to calciferol and by various forms of non pellagrous light sensitivity which may be ben fited by the administration of nicotinic acid

Appreciation of the foregoing points will convince the reader that this subject is *not* capable of rigid treatment hence the following account though grouped roughly *under the headings* of the various avitaminoses *must* be regarded as primarily a convenient classification which may have to be altered as research progresses

PELLAGRA

Definition

Pellagra is the clinical syndrome of vitamin B complex deficiency It presents a variety of signs and symptoms the identification of which (in terms of specific deficient substances) has been clarified since the discovery of various components of the vitamin B complex has enabled workers to carry out differential studies These have revealed that although the majority of signs and symptoms respond to the administration of nicotinic acid or nicotinamide certain cutaneous and mucosal lesions clear up only after other components of the vitamin B complex such as riboflavine and pantothenic acid have been added It seems justifiable therefore to

early and a red streak frequently marks the occurrence of lymphangitis It is not surprising that these manifestations are frequently regarded as a streptococcal infection until the stage of pyrexia splenomegaly and exanthem supervenes Similar syndromes are seen in almost all warm countries and are exemplified by the Q fever of Australia Japanese river fever and the tick bite fever of South Africa

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Packer H Turner H B and Dulaney A D (1948) *J Amer med Ass* 136 327
Pardo Castello V and Ferrar I (1942) *Arch Derm Syph Chicago* 45 843
Pogge R C (1944) *Int J Leprosy* 12 31
Rost G S (1942) *Radiology* 38 320
Sulzberger Marion B (1945) *Year Book of Dermatology and Syphilology* p 318 Chicago Year Book Publishers
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and milk In many parts of the tropics natives have themselves evolved supplementary foods containing the vitamin B complex in the East Indies for instance, cakes of compressed fungus (tempe) are a staple article of diet and in many parts of Africa fermented porridges undoubtedly play a part in preventing avitaminoses

Through interference with digestion or absorption—Even in the presence of an adequate diet conditioned deficiencies may arise through interference with digestion or with absorption of food factors gastritis achlorhydria carcinoma of the alimentary tract dysentery sprue colitis and impaired function following gastrectomy bowel resection and short-circuiting operations are examples

Through defective utilization or storage—Utilization and storage of nutrients may be affected by disease of the liver prolonged sepsis diabetes mellitus and malignant disease

It will be noticed that alcohol may precipitate nutritional deficiency either by causing a primary deficiency that is whenever food intake is neglected or by bringing about pathological states which may be found under any of the three headings of conditioned deficiency

Clinical manifestations

Pellagra is traditionally known as the disease of the three Ds—dermatitis dementia and diarrhoea Although this triad may be seen in certain advanced cases it is much commoner to find only one or two of these manifestations

Cutaneous lesions

These lesions vary with the degree of acuteness of the case sometimes the dermatosis progresses through different stages from acute to chronic and at other times it presents the appearance of chronic pellagra from the start

Typically the acute eruption begins mainly on the exposed parts as a symmetrical dermatosis indistinguishable from acute erythema solare The affected areas are those which react most violently in any type of light sensitivity and include the face neck V shaped area of the upper chest and backs of the hands and forearms (*see* Fig 251) other areas less commonly involved at this stage are the dorsa of the feet the shins the flexures areas subject to friction or pressure and the ano genital region During the acute stage however areas which are protected from sunlight are usually normal in appearance this is particularly well demonstrated on the upper eyelids where a narrow transverse band of normal skin represents the fold which is present when the eye is open Other parts which are relatively spared are the areas immediately behind and below the ears and beneath the chin the ulnar sides of the dorsa of the hands are usually less affected than the radial sides The normal pigmentation of Indian and Negro skins does not appear to confer any protection against this light sensitivity eruption Subjective symptoms vary from burning pain to itching according to the degree of acuteness of the eruption even in acute cases there is a surprising difference in the apparent degree of distress

The rash of acute pellagra appears first as erythematous macules which become confluent in a few hours and the skin assumes a boggy dusky appearance in

regard pellagra as a deficiency syndrome due to the lack of several substances rather than of a single dietary factor

Geographical distribution

The disease occurs endemically on a large scale in countries where maize is the staple diet Sporadic cases occur in any population among individuals subject to the conditioned deficiencies outlined below

Aetiology

Pellagra affects both sexes and may appear at any age, in infants, the appearances may differ greatly from those that are seen in adults and at any age they may be modified by the presence or absence of other avitaminoses

By definition, pellagra is a deficiency disease The concept must now be elaborated to explain certain apparent discrepancies for instance why is pellagra especially prevalent among maize eaters? Why do cases occur sporadically in individuals who live on an apparently adequate diet? Although our knowledge is incomplete sufficient evidence is available to explain these and other problems

Malnutrition may be termed (a) primary, or dietary when it results from an inadequate intake of food and (b) secondary or *conditioned* when such causes as interference with the digestion absorption or utilization of nutritive substances are operating

Primary or dietary deficiency

Apart from large endemic areas where poverty or ignorance causes the diet to be inadequate, similar deficiency is often found sporadically overwork and neglect of meals alcoholism food fads and therapeutic diets prescribed for a variety of reasons are among the more commonly encountered causes

Secondary or conditioned deficiency

Through increased demands—The demand for essential nutrients may be increased by pregnancy lactation physical exertion exposure to heat or sunlight and by certain pathological states such as prolonged fever and hyperthyroidism

A special example is the presumed existence of pellagragenic agents The old theory that pellagra was caused by a toxin in maize for example fell into disrepute for a long time but is now being revived There is considerable evidence that one or more such substances actually exist and that they produce their effects by neutralizing nicotinamide such anti vitamins are apparently widely distributed in nature —they usually take the form of inhibitory or competitive *analogues*—and the substance present in maize which exerts a pellagragenic action is presumed to belong to this group

There is thus evidence for the existence of substances which tend to produce pellagra and for the fact that they may be neutralized by an adequate intake of nicotinamide When this vitamin is deficient in the diet the endemic variety of pellagra is found, such diets usually comprise a relatively high carbohydrate fraction with an inadequate amount of such foods as lean meat liver kidney cheese

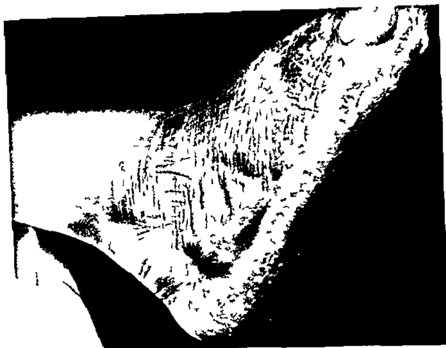


FIG 252 —Bullous lesions in a case of pellagra

A cutaneous change termed crackled skin by Platt (1945) is found extensively among populations affected by various forms of malnutrition it is to be differentiated from crazy paving skin which is a desquamatory phenomenon while crackled skin does not terminate in peeling (*see* Fig 253) There is as yet no direct evidence as to which food factors are lacking in such cases nor indeed is there proof that the condition is a deficiency manifestation

Chronic pellagrous eruptions may follow the acute stage or may appear *ab initio* Although they frequently affect the exposed parts they also have a tendency to involve areas subject to pressure they are usually but not always symmetrical Individual lesions are characterized by hyperkeratosis with a tendency to localized or diffuse thickenings which may be almost nodular to the touch and which by coalescence give rise when occurring on the face to the so-called mud pack lesion Most of these changes are accompanied by pigmentation which usually persists in otherwise apparently normal skin after healing has taken place

The palms and soles show various types of dyskeratosis which are often indistinguishable from that of non pellagrous origin A characteristic lesion is fissuring of the sole with cracks extending around the border of the heel

Numerous syndromes have been described under the title of infantile pellagra and it is probable that many of these syndromes represent a multiple deficiency such conditions as kwashiorkor in West Africa and Gillan s oedema in Kenya almost certainly belong to this group These cases are well described by Trowell

severe cases a vesicular or bullous eruption supervenes Fig 252 shows the extreme form known as pemphigus pellagrosus The rash then follows the course of most severe exogenous cutaneous inflammations weeping crusting and desquamation ensue, and the condition then may take one of two courses If healing is to take



FIG 251 —Pellagra showing involvement of areas exposed to sunlight

place, a particular form of hyperkeratosis is seen In this the skin appears dark and parchment like cracks appear and by dividing the skin into lozenge shaped areas produce the appearance aptly called crazy paving Other cases of pellagra present changes resembling chronic eczema and with the development of thickening and hyperkeratosis they drift into the chronic stage

Other dermatoses due to deficiency of vitamin B complex

In a great many cases of pellagra one sees cutaneous changes which are attributed to deficiency of other constituents of the vitamin B complex Such changes are more rarely seen by themselves and in such cases may respond at one time to the exhibition of one vitamin and at another to a different adjuvant or possibly only to a combination of vitamins The substances thought to play the principal role in these disorders are riboflavine pyridoxine pantothenic acid and *para* aminobenzoic acid Sufficient work has not yet been done to incriminate these vitamin severally certain cutaneous changes will therefore be described without attributing each one to a specific deficiency They all have this in common that they are curable with large doses of whole vitamin B complex or by the injection of crude liver extract

Disorders of the sebaceous apparatus of the face comprise an erythematous scaling condition of the naso labial grooves which in older cases may be associated with the appearance known as shark skin or dyssebacia Here inspissated sebum projects from the follicular mouths especially over the centre of the face this coupled with an accompanying dryness of the skin gives the characteristic feel when the area is stroked The condition according to Sebrell and Butler (1938) is due in most cases to deficiency of riboflavine

Vulvar or scrotal dermatitis often responds to therapy with vitamin B complex Similar lesions may be present in pellagra in sprue in ulcerative colitis or in any related condition in which vitamin deficiency may be either the cause or the result of the disease (*see* Fig 255)

A different more extensive seborrhoeic eruption was described by Gross (1941) and is of common occurrence especially in middle aged and elderly women This eruption has a predilection for the flexures the submammary gluteal and inguinal folds and the sides of the neck such cases are usually associated with hypochlorhydria and respond well to parenteral therapy with crude liver extract A similar dermatosis associated with a mild degree of macrocytic anaemia (Stryker and Halbeisen 1945) may be a variant of the same condition the writer has seen a large number of cases which showed a resemblance to both the above conditions as well as to pellagra and were associated with anaemia of various grades of severity

Oral involvement in vitamin B deficiency

The tongue may be involved separately or with other mucous membranes It may be fiery red denuded fissured and ulcerated when nicotinic acid is deficient or magenta coloured in ariboflavinosis It is often swollen and indented at the edges In other cases the tongue is pale and atrophic with a smooth surface on which sparse hypertrophied fungiform papillae may be present Subjective symptoms are present in varying degree in advanced cases pain may be so severe as to interfere with eating and drinking The foregoing description is not diagnostic of any particular deficiency and is equally applicable to the appearances which are seen in cases of for instance Addison s anaemia or some microcytic anaemias

The buccal and gingival mucosae may participate in the above changes and the inflammation may extend into the pharynx and the upper oesophagus

(1941) The infant is usually very ill, and an acute desquamative dermatitis may dominate the picture, as in Fig 254, in other cases, there is oedema with hypopigmentation of the skin and the hair the hair tends to become silky and abnormally straight In many instances the desquamative process is subacute, and in these crazy paving skin is particularly well demonstrated



Fig 253 — Crackled skin as seen frequently in cases of malnutrition



Fig 254 — Infantile pellagra

Other manifestations

Other manifestations which may be encountered are ocular changes such as blepharitis conjunctival injection and corneal vascularization various forms of nutritional anaemia and the signs of concomitant deficiency of other food factors

Diagnosis

In view of the part played by essential nutrients in the metabolism of the skin all dermatological cases must be studied so as to exclude a nutritional cause This study will entail a careful dietary history and a search for all possible causes of a conditioned deficiency by physical examination and such investigations as may be indicated

This is of particular importance in view of the facts that (a) the cutaneous manifestations recognized as being due to deficiency are not pathognomonic of malnutrition and (b) skin lesions hitherto considered to be dermatological entities may in fact be the manifestations of nutritional disease

The main points to be looked for in a general examination are mentioned below

Skin —General dryness prominence of follicles on extensor surfaces acneform eruption dermatosis affecting areas exposed to sunlight heat pressure or friction lesions resembling seborrhoeic dermatitis palmar and plantar keratodermia dyssebacia and koilonychia

Mouth —Glossitis stomatitis cheilosis magenta colouring of tongue and palate gingivitis with or without ecchymosis

Eyes —Blepharitis with involvement of the outer canthi circumcorneal injection corneal vascularization Bitot s spots keratomalacia or night blindness

Alimentary system —Pharyngitis dysphagia achlorhydria diarrhoea or dysentery gross enlargement of the liver

Circulatory system —Oedema gross cardiac enlargement and disproportionately high pulse pressure suggestive of thiamine deficiency

Nervous system —Signs suggestive of peripheral neuritis or subacute combined sclerosis changes of personality ranging from depression to frank psychoses

Blood —Anaemia especially of the macrocytic type

The discovery of several of the above abnormalities in a single case though not necessarily diagnostic of malnutrition will at least make such a condition probable and should prompt a trial of appropriate treatment

Differential diagnosis

An acute dermatitis of the exposed areas may occur through excessive exposure to sunlight in the absence of any vitamin deficiency In such a case the history of prolonged exposure without previous acclimatization and the absence of other signs suggesting malnutrition should suffice to exclude pellagra

Lupus erythematosus —This disease especially the subacute form may have to be differentiated in the manner described above though this may be difficult if

Cheilosis usually begins at the angles of the mouth as a raw moist area often with a central crack and sometimes covered with a macerated white pellicle (angular stomatitis perleche) In severe cases the lips may show *swelling ulceration or desquamation* over their whole surface (Fig 256)

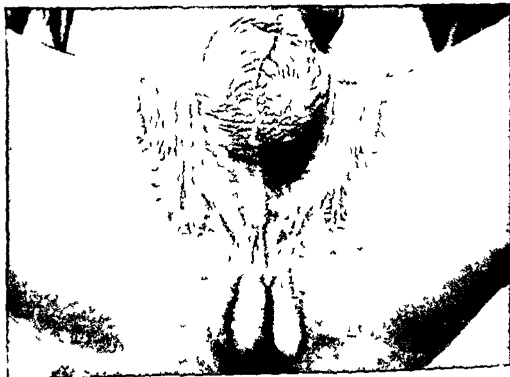


Fig 255 —Perineal lesions accompanying pellagra

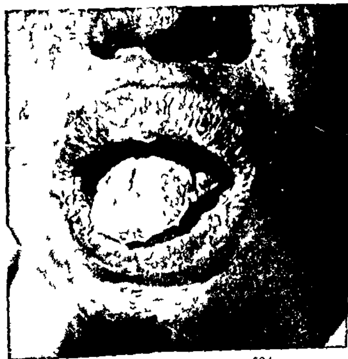


Fig 256 —Cheilosis and glossitis in a pellagrin Note indented tongue

(d) Therapy should aim at supplying at least the normal requirements of vitamins A B and C with extra supplementation of individual items when these are indicated by the clinical findings

(e) Although oral administration of vitamin supplements is usually adequate patients who are critically ill or who are vomiting or unable to swallow on account of severe stomatitis should be given parenteral therapy This may also be tried whenever the practitioner suspects that any digestive disturbance may be interfering with absorption

DEFICIENCY OF VITAMIN A

During World War I it was noticed that case of keratomalacia and xerophthalmia became frequent among certain populations These conditions were attributed at first to a fat deficiency but later work showed that they were due to the deficiency of vitamin A About 15 years later several observers in different parts of the world noticed the occurrence of a syndrome which they attributed to the same deficiency The cardinal signs are discussed below

Ocular signs

Xerophthalmia is characterized by the appearance of Bitot s spots These consist of a triangular area of bright white frothy patches situated on the conjunctiva in the interpalpebral fissure with the base of the triangle against the limbus They appear first on the lateral side but in severe cases may also be present on the nasal side of the cornea If allowed to progress the condition may go on to keratomalacia with destruction of the cornea and loss of the eye

Preceding the above objective signs diminution of dark adaptation is found when suitable tests are carried out

Phrynoderma

This name was given by Nicholls (1933) to an eruption which most authorities still regard as a typical vitamin A deficiency The earliest stage is a universal dryness of the skin of the trunk and limbs the skin becomes dull and feels harsh especially on the extensor surfaces It is here that the characteristic eruption first appears as a prominence of the follicular apparatus On examination with the lens minute acuminate papules are seen many of them showing the stump of a broken hair in the centre This keratosis pilaris is most readily found on the back of the upper arms extending over the scapulae and on the fronts and outer sides of the thighs Later in severe cases the papules are also found on the trunk buttocks and distal parts of the limbs even the backs of the fingers being sometimes affected At a later stage there is a perifollicular reaction and gross papules are formed these have a tendency to itch (see Fig 257) They are usually black in the dark skinned races and a light pink in white skinned races During recovery the central horny plug is extruded and leaves a pit in the centre of a pigmented macule In children the lesions are usually micropapular it is only after adolescence that the larger papules are commonly found (Frazier and Hu 1931 Loewenthal 1933)

Acneform eruption

On the face and upper part of the chest lesions clinically indistinguishable from non pustular acne are seen in such cases as have passed the age of puberty

there is a concomitant *anaemia*, expert examination of biopsy material may serve to make the diagnosis clear

Contact dermatitis.—Contact dermatitis may affect the exposed parts if the exogenous allergen is in the form of a vapour individuals who are hypersensitive to certain plants or to insecticides sometimes present an acute dermatitis of the face and hands which closely resembles acute pellagra Apart from attempts to elicit a history of exposure to such substances and a search for other evidences of malnutrition the examination of the upper eyelids has been of great service to the writer in contact dermatitis these are affected at least as severely as the rest of the face—more so in many cases as the allergen tends to lodge inside the fold of the upper lid, in pellagra as previously stated this area is spared

Moniliasis.—Moniliasis may closely imitate a mixed deficiency by producing angular stomatitis (perleche) and genital lesions suggestive of riboflavine deficiency there is indeed, reason to believe that this fungus infection flourishes more readily on the skin of malnourished individuals

Seborrhoeic dermatitis.—This form of dermatitis especially in young people is not generally regarded as a deficiency disease but its occurrence for the first time in the middle aged or elderly should arouse the suspicion of Gross s condition

Hyperkeratosis with fissuring of the palms and soles is frequent in tertiary yaws and a crinkled parchment like skin of the legs is seen in lepers this latter may be a sign of malnutrition through trophic disturbance

Geographical tongue.—This condition of the tongue must be distinguished from the glossitis of malnutrition this is usually easy as the former condition is life-long and asymptomatic and further presents the typical irregular, denuded patches on all parts of the dorsum of the tongue

Scrotal tongue.—Scrotal tongue may resemble pellagrous glossitis by reason of its redness and fissuring but it is distinguished by being asymptomatic congenital and often familial

Treatment

Though optimal therapeutic doses of the various constituents of the vitamin B complex have been recommended it is surprising what improvement can be obtained with such substances as crude yeast extracts Experiences such as those reported by Sefton (1947) from prisoner of war camps should prove most instructive Nevertheless when potent vitamin extracts are available they should be given in adequate amounts with supplementary nicotinamide (100 milligrams by mouth 3–5 times daily) Results will be obtained more rapidly if the following recommendations are followed

(a) Strict bed rest must be observed

(b) The diet should not be bulky and should consist principally of items which are rich in vitamin B and low in carbohydrate content such as lean meat, liver, kidney milk, cheese and eggs

(c) Intercurrent diseases especially of a febrile nature must be looked for and treated promptly

TROPICAL PHAGAEDENIC ULCER

A great deal of confusion exists today regarding this condition Medical literature is replete with accounts of the incidence and treatment of so-called tropical ulcer If these reports are examined it is found that in many cases the description is that of a different type of cutaneous ulceration such as diphtheria ecthyma or leishmaniasis Much of the needless controversy connected with this subject could be avoided if it were remembered that the term tropical ulcer is applicable to a definite entity and should not be used to describe any ulcer arising in the tropics

Geographical distribution

True cases of tropical ulcer have been described from most countries in and near the tropics The condition is especially prevalent in tropical Africa where as many as 20 per cent of adults may show the scar of this condition in certain districts it is found in those parts of India which combine a tropical climate with a heavy rain fall in the Pacific Islands and New Guinea and in parts of Central and Southern America

Aetiology

The condition begins most often in childhood but not in infancy thereafter its frequency falls gradually until its occurrence becomes rare in those of middle age or over The sexes are affected equally in most areas but in parts males seem rather more liable There is no inherited tendency to contract the disease

Numerous authors have pointed out that tropical phagaedenic ulcer occurs with the greatest frequency among ill nourished communities the writer (1932) who made a special study of the subject found a high incidence in certain African tribes who were strict vegetarians while branches of the same tribe who ate fish as a dietary supplement remained entirely free Clements (1934) made similar observations in New Guinea The widely held belief that tropical ulcer must necessarily be infectious because epidemics have been reported becomes invalid when one remembers that similar epidemics of any nutritional disease can occur under appropriate circumstances The identity of the actual substances which are deficient has never been worked out but they are most probably found in foods of animal origin

Fuso spirochaetal organisms can be located from all cases of tropical ulcer once the surface of the skin has broken They obviously play a large part in the destruction of already devitalized tissues but appear unable to reproduce the condition in its fulminating form in properly nourished individuals It is noteworthy that the same organisms and the same nutritional background are found in many cases of cancrum oris which is common in areas where the incidence of tropical ulcer is high Pre-existing disease and local breaches of the surface undoubtedly play a part in aetiology both by weakening the patient and by determining the site of the lesion

Clinical manifestations

In nearly all cases the lower third of the leg is affected though rarely the foot upper leg thigh or forearm may be involved it is the writer s belief that cancrum oris is the same disease located in the mouth In a proportion of cases the first manifestation is a painless bulla on the front or outer side of the leg the contents of this

Treatment and progress

If vitamin A is given orally in doses of 100 000 or more international units daily, night blindness usually disappears in a matter of days or even hours, Bitot s spots take about a week to clear up and the eruption of phrynoderma from 6–8 weeks



Fig 257 —Phrynoderma (deficiency of vitamin A) in a South African native

VITAMIN C DEFICIENCY

Many cases of scurvy show cutaneous haemorrhage either petechial or as large ecchymoses As a rule haemorrhages into the muscles especially of the thighs and into the gums coexist or precede this manifestation The capillary resistance test that is the application of a sphygmomanometer for 3 minutes at a level mid way between the systolic and diastolic blood pressures is often positive when the condition is still in the subclinical stage The petechiae thus produced tend to be perifollicular in distribution There is evidence that deficiency of vitamins A and K may also be concerned in these phenomena

A second cutaneous manifestation of scurvy is the appearance of a follicular keratosis apparently identical with that of vitamin A deficiency well established cases however show evidence of extravasation of blood in and around the papules even without application of the tourniquet

The specific treatment of scurvy is by the administration of ascorbic acid in doses of 500 milligrams daily but as in the other deficiency diseases a full diet rest and total vitamin supplements are desirable

TROPICAL PHAGAEDENIC ULCER

Definition

Tropical phagaedenic ulcer (ulcus tropicum) is an acute localized usually solitary necrosis of the skin, occurring under certain conditions of diet and climate

A great deal of confusion exists today regarding this condition. Medical literature is replete with accounts of the incidence and treatment of so-called "tropical ulcer". If these reports are examined it is found that in many cases the description is that of a different type of cutaneous ulceration such as diphtheria, ecthyma or leishmaniasis. Much of the needless controversy connected with this subject could be avoided if it were remembered that the term "tropical ulcer" is applicable to a definite entity and should not be used to describe any ulcer arising in the tropics.

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In nearly all cases the lower third of the leg is affected though rarely the foot, upper leg, thigh or forearm may be involved. It is the writer's belief that cancrum oris is the same disease located in the mouth. In a proportion of cases the first manifestation is a painless bulla on the front or outer side of the leg, the contents of this

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Among these may be mentioned the primary lesion of yaws which is not remark able for its odour unless phagaedena is supervening and various forms of pyodermia which in addition to the foregoing distinguishing characteristics are usually multiple In the chronic stage it is often difficult to decide whether the ulceration is the result of phagaedena or of some other condition in any case it has now become a non specific ulcer on a fibrotic base and should be regarded as a sequel rather than a manifestation of active disease Differential diagnosis is best made on the clinical appearance the identification of fuso spirochaetal organisms is of some value though these may also be present in small numbers as secondary invaders in other forms of ulceration The Wassermann and Kahn reactions will be of little value even if they are positive as tropical ulcer is especially prevalent in endemic areas of yaws

Treatment

Preventive

As the incidence of tropical phagaedenic ulcer is negligible among labourers police house servants and others who subsist on a reasonably balanced diet even though they come from districts in which the disease is rife prevention is the con cern of those who are responsible for the nutrition of native communities

Curative

So many apparently successful treatments have been described by as many observers that one is led to the conclusion that bed rest and an adequate diet are themselves of prime importance these being the only conditions common to most series of reported cases The value of almost all these reports is reduced consider ably by neglecting to provide control series under identical conditions of rest and diet Such diet should contain a high proportion of protein and a reduced amount of carbohydrates which latter form the bulk of foods normally taken by susceptible populations Vitamin supplements should be given when available as many of these cases show signs of other nutritional deficiencies

There is no specific treatment for the ulcer itself but parenteral administration of penicillin and dressings of penicillin solution or of a sulphonamide powder are of assistance in checking secondary invaders Daily intravenous injections of calcium chloride (10 millilitres of a 10 per cent solution) rapidly abolish the offensive odour and seem to hasten the shedding of necrotic tissue Places which do not show prompt tissue response often benefit by curettage of the ulcer and excision of the edges under general anaesthesia this may be followed by skin grafting if the base remains healthy after the operation Chronic fibrosed ulcers are a surgical problem and must be treated in the same way as similar ulcers arising from other causes

Prognosis

With facilities for treatment as outlined above the outlook in most cases is excellent The dietary habits of natives and their tendency to take patients away from hospital before healing is compl te account for a number of relapses

bulla are turbid but sterile on culture Other cases begin at the site of minor superficial trauma for instance an infected jigger flea lesion or in an ulcer of different causation such as yaws or ecthyma The bulla ruptures within a day or two in primary cases and the ensuing ulcer enlarges with such rapidity that, within a week an oval area measuring up to a foot in its long axis may have become affected In its fully developed state the ulcer is characterized by a raised edge and a base covered by yellow, brown or black tatters of necrotic tissue among which may be distinguished blackened tendons and bone denuded of its periosteum the whole



FIG 258 —Tropical phagaedenic ulcer

exuding a turbid secretion (*see* Fig 258) The odour at this stage is *appalling* and resembles that of acute wet gangrene There is little evidence of tissue reaction in the shape of frank pus or surrounding hyperaemia nor is there *any marked* enlargement of the regional lymphatic glands The patient s temperature usually shows a moderate rise and there may also be signs of generalized intoxication

A few patients do not survive this stage but die of exhaustion or *intercurrent* disease in the majority however a very slow change takes place in the appearance of the lesion and after some weeks or months the necrotic tissue *is* shed and granulations slowly appear Concomitant fibrosis takes place around and beneath the ulcer so that the end result is often a chronic tropical ulcer *almost* cartilaginous to the touch, which has lost all evidence of necrotic change but shows no tendency to heal In cases which eventually heal contractures and deformity are *frequent*

Diagnosis

In the acute case the odour and the presence of necrotic debris contrast with other forms of ulceration which tend to show granulation and purulent exudate

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With facilities for treatment as outlined above the outlook in most cases is excellent The dietary habits of natives and their tendency to take patients away from hospital before healing is complete account for a number of relapses

PRICKLY HEAT

Prickly heat (miliaria rubra lichen tropicus) *is the first manifestation of an occ*lusive disorder of the sweat glands World War II served to focus attention on this complaint and to shed fresh light on *what was once considered a trivial ailment* The presence of large bodies of troops of European stock in tropical areas demonstrated how *much ill health could be directly attributed to this disorder and research* by independent workers revealed that other forms of ill health in the tropics could accompany *and follow prickly heat The writer feels therefore that this condition* should be elevated from the status of a minor malady, and should be the subject of a *more than usually detailed account*

Two sets of investigators have recently devoted painstaking attention to the disease and its sequelae and their independent results are completely in accord Sulzberger Emik and Zimmermann (1946) dealt with cases occurring in the United States Navy in the Pacific, the patients of Allen and O Brien (1944) were Australian soldiers in Northern Australia and Dutch New Guinea So closely do these authors agree that their findings may be taken to represent the most accurate account of the subject to date

Geographical distribution

The condition is most prevalent in hot humid regions and is consequently met with commonly at sea level in the tropics Certain parts are *notorious for the pre*valence of prickly heat for instance the Red Sea the Persian Gulf parts of the West Indies and the Pacific Islands but it is probable that *the disease is universally* distributed wherever the necessary conditions of temperature and humidity obtain Thus it is found not only in low lying tropical countries and ships *in tropical waters* but also in the so called temperate zones such as the Mediterranean basin during certain seasons *Deep mines in many parts of the world also provide the necessary* factors of heat and humidity It is possible that prickly heat may occur under dry desert conditions (*Wolkin Goodman and Kelley 1944 Ladell Waterlow and* Hudson 1944) and probable that similar sequelae to those described later can *occur there conclusive evidence is so far lacking*

Aetiology

As the great majority of European residents in the tropics are young or middle aged adults the disease has naturally been described as occurring *most frequently* at these ages This is probably incorrect ships surgeons habitually see *patients of* both sexes from infancy to old age suffering from the complaint *The alleged* susceptibility of newcomers to the tropics is possibly explained by irreversible occlusive changes having occurred in the sweat glands of *older residents* The experience of all practitioners in the tropics points to a personal *predisposition* which is not, contrary to general belief dependent on differences in *build or colour*ing so far as the European is concerned Though Sulzberger and Emik observed prickly heat in individuals of various races including Negroes *it is generally* believed that the Negro race is singularly immune Accurate *statistical figures* are not available

Apart from climatic conditions certain predisposing causes may initiate or aggravate an attack these causes comprise unsuitable or ill fitting clothing causing friction and interference with the evaporation of sweat sea bathing and all con ditions which stimulate excessive sweating the most frequent of these being physical exertion spiced foods and excessive use of alcohol

Clinical manifestations

The onset may occur after a few hours or more commonly weeks or months in the predisposing climate A sudden pricking and burning is followed by intolerable itching of the covered parts especially those where clothing or the natural skin creases cause friction

First stage

Examination at this stage shows a punctate erythematous eruption often partly disguised by the diffuse erythema and excoriations produced by scratching Close scrutiny shows that most of the red puncta present a tiny clear vesicle in the centre others form an areola round minute red papules After a few days if secondary infection is present some of the vesicles have become pustular Later still the vesicles have ruptured and superficial desquamation marks the end of the attack The hair follicles are not affected at all and a careful examination will thus easily differentiate prickly heat from folliculitis

It is highly probable that this acute phase does not affect sweat glands more than once Subsequent attacks therefore will involve those glands which were spared on previous occasions while those first affected are undergoing chronic occlusive changes The acute phase in a given sweat gland lasts for a matter of days only probably never more than two weeks

Second stage (tropical anidrosis)

After the acute attack has passed the affected glands remain blocked by keratin plugs This is the stage which O Brien (1947) has called tropical anidrosis its description is taken in a condensed form from his account

> When the subject is examined while at rest in the cool of the day the skin except perhaps for a little branny desquamation may seem normal if inspected very closely the keratin plugs may be just discernible by the naked eye as multiple minute grey ish shining macules If however the skin is examined immediately after the subject has concluded some severe physical effort in the heat of the sun the patch shows two abnormalities First the affected skin is completely devoid of sweat Secondly there is a diagnostic rash On superficial examination the affected skin appears very similar to gooseflesh However close scrutiny reveals that the lesions are not associated with the hair follicles but are deep vesicles which appear like sago grains implanted within the skin They are matt white in colour round and of very constant size their diameter being about one millimetre There may be 50 or even 100 lesions per square centimetre of skin surface The skin between them is not red and may be even a little paler than normal

The vesicles here described are the result of extravasation of sweat into the skin around the ducts as will be described later This explains the fact of their recurrence each time the patient exerts himself in any way

Third stage

The permanent occlusion of more and more sweat glands after successive attacks of prickly heat eventually leads to a severe diminution in the amount of sweat which can be delivered on to the surface This is apparently the cause of the condition called tropical anidrotic asthenia, possibly identical with heat exhaustion type II a description of its symptomatology is outside the scope of this work

Other complications

Prolonged scratching and secondary infection and possibly *sensitization to topical applications*, may lead to an eczematous and eventually lichenified condition of parts of the skin It is suggested that this constitutes one form of what is loosely termed tropical dermatitis a name which does not represent any specific disease entity

A similar condition, due to plugging of the sebaceous gland orifices has been called tropical acne It may coexist with prickly heat and it may manifest itself *de novo* or as an exacerbation of an already existing acne vulgaris

Diagnosis

Diagnosis is not difficult as regards an acute attack of prickly heat The distribution of the eruption close examination of individual lesions and awareness of the predisposing climate are usually sufficient to make the diagnosis When eczematization or infection has supervened the underlying cause may be overlooked unless special attention is paid to outlying lesions centred on sweat glands

In the stage of tropical anidrosis, very careful examination of the skin before and after exercise will be necessary In cases of doubt, the finding of typical occlusive changes in the sweat glands of a biopsy specimen would be of assistance

Histopathology

Occlusion of the mouth of the sweat duct with a horny plug is followed by dilatation and rupture of the obstructed duct with exudation of sweat into the surrounding tissues this constitutes the superficial intra epidermal vesicle of prickly heat The affected part is the centre of an area of oedema and gross infiltration with lymphocytes The later stages are marked by deeper horny plugs and secondary subepidermal rupture of the sweat ducts in this way the non itching lesions of tropical anidrosis are produced

Treatment

Prevention of prickly heat is assisted by the wearing of suitable clothes sparing use of soap and occasional inunction of the skin with lanolin This is suggested by O Brien in order to counteract a possible depletion of skin lipoids which may be an aetiological factor

Symptomatic relief of the eruption may be obtained by the avoidance of exercise during the heat of the day and by the frequent application of cooling and drying

lotions preferably containing ingredients designed to produce mild desquamation and to regulate keratinization The following is an example

Liq Pic Carbon	– –	30 min
Acid Salicyl	– –	60 gr
Sp Rect		
Lot Calamin (*B P*)	–	aa ad 4 oz

O Brien recommends that desquamation should be hastened at least in the chronic phase by painting the skin up to 5 times daily with 10 per cent salicylic acid in 90 per cent alcohol for 2–4 days after this lanolin inunctions decreasing from twice daily to once weekly are instituted

Prognosis

This is good for the individual attack but there is now evidence that the subject of repeated attacks of prickly heat may become unsuitable for residence in tropical climates

TROPICAL LICHENOID DERMATITIS

Tropical lichenoid dermatitis (atypical lichen planus quinacrine hydrochloride dermatitis New Guinea rot) was noted for the first time on an extensive scale during World War II and is generally acknowledged to be the result of susceptibility to the antimalarial drug quinacrine hydrochloride (mepacrine Atebrin) Although cases have now been seen in East West and North Africa and especially in New Guinea and other areas of the Pacific it is not strictly a tropical disease as it occurs in persons taking the causative drug in such temperate regions as Italy It is probable that several distinct clinical pictures can be produced by the prolonged ingestion of quinacrine hydrochloride and that these are distinct from the rare acute cases of photo sensitivity produced by the same drug This account deals with the variety which has been most widely reported

Aetiology

There is no evidence that any factor other than personal idiosyncrasy to quinacrine hydrochloride is involved Alleged effects of heat exertion and strain are those common to large bodies of men fighting a war in countries where malaria is endemic Though only one case has been described in a woman this apparent preponderance in the male sex is probably due only to the overwhelming proportion of men in the Armed Forces The incidence of the disease among those taking quinacrine hydrochloride appears to be less than one in a thousand the great majority of patients have taken the drug for more than 6 months before the onset of dermatitis

Clinical manifestations

There is no clear-cut picture of this disease which varies in appearance during its evolution and in different individuals The eruption is symmetrical and the earliest lesions are usually situated on the hands feet groins or neck In the first two situations they frequently resemble manifestations of dermatophytosis with gross exfoliation Itching at this stage is almost invariable Many patients develop the

universal eruption without any such preliminary involvement of selected areas Numerous types of lesion are encountered—eczematous maculo squamous and bullous among others—but at some stage the papules usually considered diagnostic of lichen planus are seen (*see* Fig 259) These papules have a tendency to coalesce

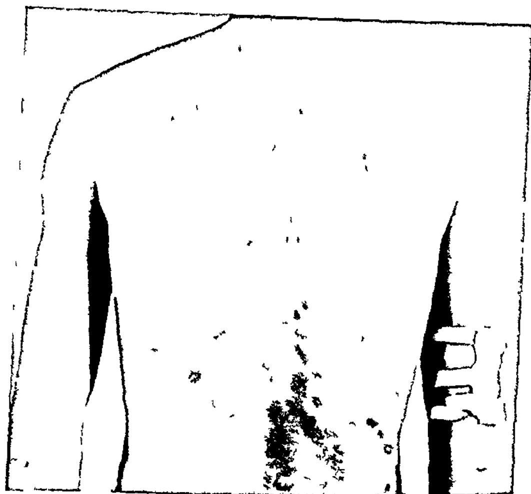


Fig 259 —Tropical lichenoid dermatitis

forming lichenified plaques the colour of which is typically violaceous in many cases a verrucose surface is produced and the lesions are then indistinguishable from hypertrophic lichen planus Any part of the surface may be affected certain cases have shown patchy alopecia and others dystrophy of the nails but these are not common manifestations The eyelids and circumocular skin frequently show lesions arranged in a spectacle frame pattern The glans penis is not affected so commonly as in cases of extensive true lichen planus The buccal mucosa is usually involved, the eruption appearing as leucoplakic areas or as patches indistinguishable from the manifestations of lichen planus Some weeks or months after ceasing to take quinacrine hydrochloride regression of the lesions occurs leaving patchy pigmentation and superficial scarring the moth eaten type of alopecia which has been described is probably best seen at this stage and recovers later on

TROPICAL LICHENOID DERMATITIS

Although most accounts have described the foregoing clinical picture many cases are of a milder nature and show only a few lesions in such cases the sites most commonly affected are the dorsa of the hands and feet and the legs The appearance may be altered by secondary infection especially when maceration of the surface has taken place in hot humid climates and an eczematous dermatitis may then dominate the picture In very long standing cases a diffuse hyperkeratosis with follicular plugging is said to develop There is no apparent relation of the disease to the diffuse yellow discoloration of the skin sometimes seen in those who take quinacrine hydrochloride for prolonged periods

Histopathology

The histological picture shows wide variations Areas which closely imitate lichen planus may be seen in some cases in others one finds only an acute inflammatory condition with a polymorphous cellular infiltrate The frequent pigment laden chromatophores in the cutis probably account for the naked eye bluish coloration of many of the lesions

Diagnosis

The appearance of florid lesions resembling lichen planus in a person taking quinacrine hydrochloride over a period of months is almost diagnostic In mild cases there may be difficulty in distinguishing the condition from true lichen planus In cases in which an eczematoid dermatitis has supervened the underlying eruption may be overlooked unless the whole surface of the body and the buccal mucosa are carefully examined The salient features are the bizarre appearance of the fully developed eruption the striking violaceous or bluish colour of the lesions and the tendency to hypertrophy and verrucosity Although the papules of lichen planus are always present to a greater or less extent there is usually some element about the eruption as a whole which makes the diagnosis of true lichen planus improbable

There is no laboratory procedure which is of any value in diagnosis patch testing with solutions of quinacrine hydrochloride has been said to produce a reaction in some cases but this is not the experience of most observers

Prognosis and treatment

The disease persists for a number of months after the patient ceases to take quinacrine hydrochloride and temporary exacerbations may occur during recovery If the drug is exhibited during this time some but not all cases show a prompt relapse Secondary infective or allergic dermatitis requires its own treatment apart from this there is no known remedy which hastens cure

The writer gratefully acknowledges the help given by Dr M M Suzman of Johannesburg in the preparation of the section on Pellagra

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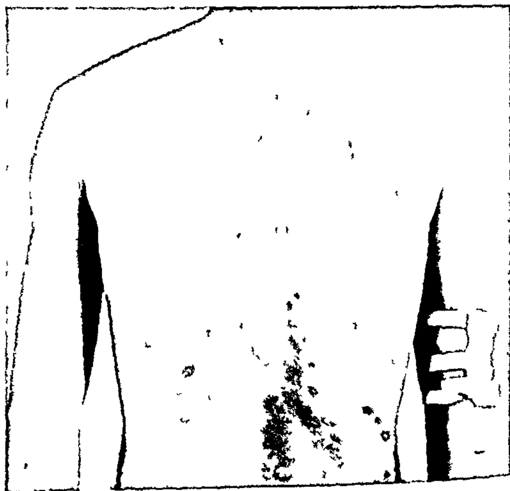


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CHAPTER 37

DISEASES OF THE SKIN AFFECTING THE MUCOUS MEMBRANES

D E H CLEVELAND

GENERAL CONSIDERATIONS

THE mucous membranes lining the terminal orifices or pouches of the gastro intestinal and urogenital passages may be regarded as modified skin There are certain minor structural differences there is no interlocking of epithelial rete pegs with dermal papillae there are no coil glands and no hairs while sebaceous glands are modified, as in the coronary sulcus where they produce smegma or are represented by analogues as in the mucous glands of the lips The mucous membranes are thinner also than true cutaneous structures

Except on the prepuce and glans of the circumcised penis and the vestibule of the many and oft parturient vulva the mucous membranes line more or less closed cavities Moisture and warmth therein are constant conditions and combine to modify the appearance of the lesions of dermatoses which are familiar on the skin but become readily recognizable in such an environment

Sutton and Sutton (1939) classify the mucous membranes adjoining the skin as (1) conjunctival (2) nasal (3) penile (4) vulval and vaginal (5) anal and (6) oral As nearly all the diseases of importance which may involve any or all of the other mucosal cavities occur in the mouth where they are chiefly and most readily observed it will be sufficient to confine our attention with a few exceptions to this area

Many of the conditions found on the skin may involve any or all of the orificial mucosae especially in the oral cavity and there are a number of conditions peculiar to buccal or genital mucosae which are sufficiently common or significant to make their recognition a matter of importance The well recognized dermatoses which commonly produce lesions of the oral mucosa do not do so invariably on the other hand the mucosal lesions of these diseases may remain for prolonged periods as their only manifestation

LICHEN PLANUS

Lesions of the mucous membranes are frequently present and are so typical that in cases in which the cutaneous involvement is such as to render the diagnosis uncertain oral lesions may be sufficient to resolve the doubts These oral lesions are most commonly seen on the buccal mucosa as delicate white lines suggesting a railway map with small white papules at the intersections They may form a complete net work or there may be many breaks Sometimes the appearance of a fine lace work is produced and occasionally larger papules may dominate the picture with only

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invariably positive for syphilis These last two characters must of course be sought for before any specific treatment has been administered (Fig 261)

Lichen planus is frequently seen on the glans penis where more often than in the mouth it may persist for a long time as the only manifestation of the disease One or more fairly typical discrete flat topped shiny pearly white papule may be seen



Fig 261 —Lichen planus showing large papules in buccal mucosa

rosette arrangements may be formed and extensive involvement by coalescence into a coarse meshed network is not rare Maceration is rarely present to the degree shown in oral lesions dull pink to violaceous tints and a burnished surface are usually seen (Figs 262 and 263)

The mucosal lesions are symptomless and local treatment is not called for they are usually more resistant to the accepted methods of systemic treatment than are the cutaneous lesions Persistence of the eruption confined to the glans is certain to arouse apprehension in the mind of the patient In such a situation it will be wise to submit a small biopsy specimen to histological study rather than to rush into therapeutic effort

PEMPHIGUS

Lesions in the oral cavity are of bad prognostic significance Subjective discomfort such as dryness or burning may precede the insidious onset of vesicles or bullae These may be few and small at first and there may be complete disappearance in

occasional linear markings In all cases the figuration is whitish (Fig 260) Less commonly the gingival, labial, palatal or tonsillar mucous membranes may present solitary aggregated or coalesced papules It is important to remember that the lesions of lichen planus in the mucous membrane are essentially the same structures as appear on the affected skin, their modified appearance is due to the minor structural differences that exist between mucous membranes and external

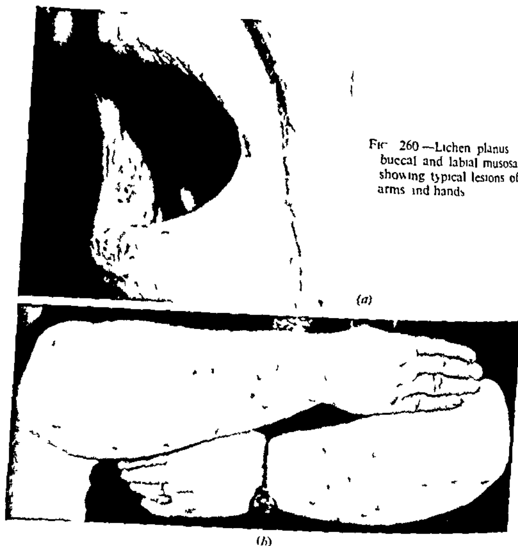


Fig 260 —Lichen planus (a) of buccal and labial musosae (b) showing typical lesions of forearms and hands

cutaneous surfaces and the *maceration* produced by the moisture and warmth of the oral cavity

Oral lichen planus may be confused with leucoplakia or the mucous patches of syphilis *From the milder* grades of leucoplakia distinction is not always at first possible and may depend upon the presence of typical lichen planus of the skin and its modification or disappearance under appropriate treatment The mucous patch of syphilis usually has some peripheral redness and is evanescent in character with or without antiluetic treatment dark field examination of scrapings from its surface demonstrates typical *Treponema pallidum* and the serological reactions are

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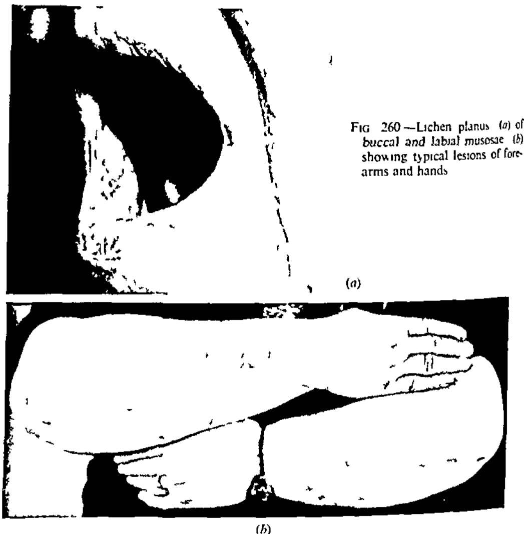


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(b)

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FIG 262 — Lichen planus confined to glans

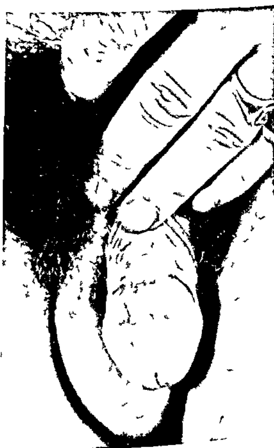


FIG 263 —Lichen planus of glans and prepuce (Verruca vulgaris of left index)

the same order as they appear They usually appear at first about the faucial pillars and on the hard and soft palates They are delicate rupturing readily and contain clear serum at first sometimes tinged with blood When ruptured they leave painful erosions at first healing readily but as the disease advances these coalesce and adhesions between contiguous surfaces appear The disease may be limited for weeks or months to the oral cavity or may be accompanied in fulminating general cases by similar lesions of all the mucosal cavities as well as the skin associated with extensive erosions adhesions and haemorrhagic crusting at the orifices The writer has seen complete exfoliation of the oral mucosae and adhesions between palpebral and bulbar conjunctivae within 6 days after the initial appearance of sore throat and a few small blebs on the soft palate

Differential diagnosis

Pemphigus of the oral cavity must be distinguished from erythema multiforme the mucosal respiratory syndrome epidermolysis bullosa drug eruptions diphtheria and syphilis Erythema multiforme occurs in but is rarely confined to the oral cavity and is apt to have a seasonal incidence the blebs are larger flatter and surrounded by an erythematous halo but they rupture so promptly that usually superficial sensitive erosions fringed with a few shreds of ruptured bullae are all that remain to be seen The mucosal respiratory syndrome may cause more confusion although its predominance in the male sex its involvement of all orificial mucosae and its respiratory complications should serve to distinguish it Epidermolysis bullosa does not produce systemic disturbance and being a congenital dystrophy it appears at an early age Carefully directed inquiry into the medicinal preparations used generally self prescribed should elicit the correct diagnosis in dermatitis medicamentosa Diphtheria more apt to confine itself to the faucial areas is accompanied by severe constitutional disturbance and bacterial study will be conclusive As Stokes points out vesicular lesions are never an intrinsic part of the syphilitic eruption in the adult therefore an eruption that is primarily vesicobullous should not be confused with syphilis

Treatment and prognosis

There is no specific for pemphigus The prognosis is especially poor in the presence of mucosal involvement and treatment is palliative only

ERYTHEMA MULTIFORME

This disease tends to prevail in spring and autumn and occasionally involves the lips and oral cavity The lesions found are again simply modifications of the typical cutaneous lesions and have been described above On the lips they tend more frequently to have a characteristically annular appearance

Ectodermosis erosiva pluriorificialis

The mucosal respiratory syndrome of Stevens and Johnson or ectodermosis erosiva pluriorificialis has by many been considered to be a variant of erythema multiforme It presents cutaneous as well as mucosal lesions but they do not show the predilection for the extremities exhibited by the latter disease centring rather



FIG 262 —Lichen planus confined to glans

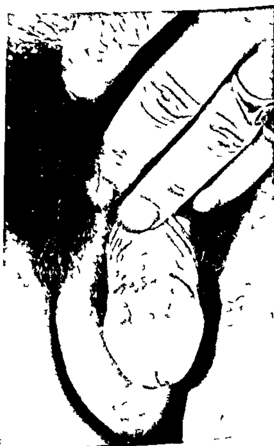


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Fig 264 —Ectodermosis *erosiva* pluriorificialis (Stevens Johnson disease or mucosal respiratory syndrome) Patient aged 20 years Conjunctivae lips and oro pharynx trachea bronchi urinary meatus and skin involved Com plete recovery following use of sulphanilamide

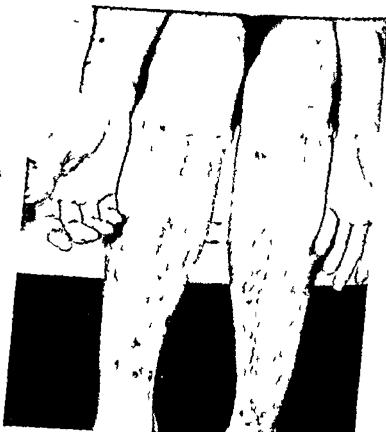


Fig 265 — Ectodermosis *erosiva* pluriorificialis Same case as in Fig 264 showing discrete and grouped erythe mato bullous lesions of skin of extremities

about the body orifices The eruptive features of the disease are frequently preceded by symptoms referable to the respiratory tract and the conjunctivae nasal cavities and anal and urethral orifices are also usually involved The constitutional reaction is sharp and febrile Macules vesicles and membranous exfoliation with free sero-purulent discharge succeed each other rapidly The author has found sulphanilamide useful and bland washes such as 1 10 000 potassium permanganate cleansing and soothing (Figs 264 and 265)

EPIDERMOLYSIS BULLOSA

This is a congenital dystrophy in which bullae are readily produced by slight trauma It is not a common condition but should be mentioned because a large proportion of cases present oral lesions which may be followed by leucoplakia There is no satisfactory treatment other than palliative but the condition often disappears about puberty

DRUG ERUPTIONS

The coal tar analgesics and antipyretics the barbituric and salicylic acid compounds may produce oedema vesicular and bullous lesions in the mouth occasionally causing not only erosions but ulcerations Phenolphthalein is the active principle of an enormous number of popular laxatives It is efficient and cheap and thus is pleasing to the purchaser who feels that he is getting action for his money and to the manufacturer because he gets a large profit Phenolphthalein may produce macular and bullous lesions on the skin which are often followed by pigmentation these lesions disappear only to reappear on the identical site when the drug is taken again On account of this behaviour the disorder is called a fixed eruption Pink confectionery icings of cakes ice-cream dentifrices and mouthwashes usually owe their colour to the indicator effect of phenolphthalein in an alkaline medium Congestion of the anal mucosa with the production of an intolerable itching is also an effect that may be produced by this drug Lesions similar to those produced on the skin with environmental modifications may appear in the mouth

The halogen salts particularly iodides may produce bullous haemorrhagic and fungating lesions in the mouth as well as on the cutaneous surfaces As with phenolphthalein sensitization to halogens may be so extreme that the most minute quantity is sufficient to evoke the most violent reaction A most severe case of iododermia which nearly terminated fatally was seen produced by a popular and most useful asthma remedy which contains an extremely small amount of iodopyrine In this patient fungating haemorrhagic lesions were not only present on face and extremities but in the oral cavity the involvement was so severe as to render speech impossible and only liquid feeding could be given

Severe urticarial swelling of the lips and lids may result from quinine this may also involve the tongue rendering speech and swallowing difficult

The mucosal reactions which may accompany arsphenamine dermatitis are usually limited to redness dryness and oedema Gingivitis and occasionally general stomatitis may follow the oral or parenteral administration of the salts of heavy metals bismuth gold and mercury Mercurial stomatitis often accompanied

by gastro enteritis has for long been a *well recognized clinical entity* Rarely mercury in organic compounds may produce stomatitis as was seen in a new born infant treated for *impetigo* by *painting with 5 per cent aqueous mercurochrome* Bismuth commonly produces a deposit of bismuth sulphide in a dark line in the gums proximal to the *necks of the teeth similar in appearance and pathogenesis* to the familiar lead line , especially in smokers or those whose oral hygiene is defective *Unless inflammation of the* mucous membrane is also present the development of a bismuth line is not a contra indication to continuance of *necessary bismuth therapy*

Sensitization to sulphonamides especially from their topical use in skin infections is being observed with increasing frequency Stomatitis of varying degrees of severity usually accompanies the more severe reaction to these drugs Less frequently penicillin used topically or parenterally produces similar but usually less severe reactions in skin and mucous membranes Urticaria which may sometimes be accompanied by swelling of lips or tongue is a common type of penicillin reaction and generally subsides rapidly on exhibition of Benadryl or other of the antihistamine drugs Irritation and redness of the buccal mucous membrane has also been observed following the use of penicillin lozenges which are held in the mouth to melt

Every physician should familiarize himself with the ingredients of popular patent medicines in so far as their content of the drugs most commonly productive of eruptions is concerned The question *Are you taking any drugs—any medicines?* will frequently draw blank People seldom think of laxatives as medicines *but rather as a household convenience or necessity like soap A more fruitful* inquiry will be directed towards common complaints for which *people dose them selves constipation headache nerves insomnia indigestion* and the like In every case of inflammation of mucous membranes without *readily apparent cause* a searching inquiry should be conducted *for one in the family medicine* cabinet

In most cases of drug eruption withdrawal is sufficient Symptomatic treatment such as mild alkaline mouthwashes may be necessary In the severe halogen eruptions displacement of the iodide or bromide radical by sodium *chloride* is of value giving 1 000 millilitres or more of decinormal saline solution intravenously *In the* stomatitis as well as the severe dermatitis resulting occasionally from trivalent arsenic and other heavy metals the value of *BAL* is *unquestioned and may be* life saving

LUPUS ERYTHEMATOSUS

The buccal mucous membrane the tongue or lips may be involved *In the first* mentioned site *lupus erythematosus appears as a superficial* slightly elevated patch with a depressed centre surrounded by radiating minute vessels As the lesion develops *its centre may erode healing with a covering of deeper coloured* epithelium which may present whitish stippling or linear markings while the radiating telangiectatic vessels are replaced by white lines On the tongue *slightly* atrophic patches with loss of papillae and a reddish halo are readily distinguished from *superficial* leucoplakia Mucous patches which they may resemble are *distinguished* by their ephemeral character lesions of lupus erythematosus are permanent atrophic scars

On the lips the lesions are somewhat similar to those on the buccal mucous membrane but tend to coalesce and become covered with adherent scales (Fig 266) The mucous membrane lesions are much more resistant to treatment than the cutaneous lesions but cryotherapy with solid carbon dioxide or liquid oxygen has been found useful Special precautions should be taken to protect the lips from



Fig 266 — Lupus erythematosus of lips Typical discoid lesions were also present in malar regions

sunlight a deep red lipstick or *para* aminobenzoic acid cream is recommended when exposure is unavoidable

TUBERCULOSIS

This occurs on the mucosal surfaces about the orifices of the oral cavity the anus the glans penis and the vulva in patients with pulmonary laryngeal intestinal or urogenital tuberculosis Lesions also occur on the buccal mucosa the tongue and the hard and soft palate

Many of these lesions extend over to the adjacent cutaneous surfaces and are grouped under the term tuberculosis cutis orificialis In general they are nodular ulcerative lesions either the nodular or the ulcerative character predominating in different localities The initial lesion is nodular and the nodules sooner or later break down into ulcers which are usually shallow indolent and granulating In drier localities thin serous crusts cover the ulcers Their indolent character is in striking contrast to syphilis and cancer the indolence being second only to that of leprosy On the tongue the ulcers are apt to be large deep and often accompanied by verrucous thickening while elsewhere they are small discrete and shallow and occasionally as on the buccal mucosa coalescing The more frequent involvement of the tip and sides of the tongue is sometimes considered to be of diagnostic

import, but this should not be relied upon to the exclusion of biopsy as tuberculous ulcers *may occur on any part of the tongue*

In the labial nasal anal and genital mucous membranes the same general character of lupoid nodules succeeded by shallow ulceration is seen, but extension to, sometimes from the surrounding cutaneous surface is usual perforation of the nasal septum, deep and painful fissures in the lip or extension from perianal surfaces to rectal mucosa are frequent

Tuberculous lesions of the mucosal surfaces must be differentiated chiefly from *syphilis and cancer* The clinical resemblance between chancres, gummatous ulcers carcinoma and tuberculous nodules and ulcers is often close Regional lymphadenopathy is a conspicuous accompaniment of primary syphilis, is absent with gumma and is not always present and is never conspicuous in early cancer except in the external genitalia it is only occasionally seen in tuberculosis Dark field examination of serous discharge from an ulcer the examination of stained smears the tuberculin test the sputum examination and the biopsy are essential procedures in the study of chronic ulceration of the mucous membranes No one test should be relied upon, even the biopsy does not always give an unequivocal answer

While local destructive measures may occasionally be indicated in tuberculosis cutis orificialis it must be remembered that this condition is due to inoculation with discharges laden with tubercle bacilli and sanatorium care is necessary not only as a therapeutic but also as a public health measure The prognosis in these cases is poor

SYPHILIS

At all stages syphilis involves the mucous membrane In primary syphilis involvement almost always occurs in early exanthem it is an usual occurrence and it happens frequently in late syphilis The genital chancre does not differ fundamentally in the sexes but great variation occurs in its appearance in different individuals of the same sex or between male and female largely dependent upon its location

Clinical features

Despite the use of the term typical referring to its solitary *character, clean* base induration and other signs diagnosis should never be based solely upon its gross appearance A chancre may be smaller than a pin head *or it may be* several centimetres in diameter Its predominant character may be erosive ulcerative or indurative It may appear on the cutaneous surface of the *genitalia or the* adjacent parts but the mucosal surface of the prepuce the glans *penis* the uterine cervix and mucosal surface of the labium majus are the *sites of most chancres* The anal and oral mucosae are the principal sites of extragenital chancres *Stokes* has warned that any skin or *mucous membrane lesion of the ano* genital area must be regarded as syphilitic until proved otherwise The most typical chancres have sometimes proved to be *non syphilitic* and lesions appearing to be *of the most* trivial character and totally unaccompanied by any other suspicious circumstances have *proved to be syphilitic* chancres In such lesions no treatment or applications other than normal saline solution must be permitted One must not wait *for a positive* sero logical report on a blood sample Serum from the surface or if the lesion has been

tampered with juice aspirated from the satellite lymph node must be obtained and submitted at once to the laboratory for dark field examination Treatment the diagnosis once securely established is systemic and not local and will be found discussed in its proper place elsewhere in this book (*see* page 299)

Differential diagnosis

In the differential diagnosis of syphilis of the ano genital mucosae special consideration should b given to chancroid and granuloma inguinale These venereal diseases may coexist with syphilis The incubation time is brief in comparison with syphilis and smears showing the Ducrey bacillus or the Donovan bodies may be obtainable b fore sufficient time has elapsed for a chancre to develop but although the complement fixation or flocculation tests are negative it must never be concluded that evidence of this sort conclusively disposes of the possibility of syphilis As Stokes has said one may diagnose a chancre in 3 minutes but it takes 3 weeks to diagnose a chancroid The excessively destructive behaviour of chancroids in the case of granuloma inguinale often resulting in severe mutilation and extensive loss of function from genital and anal involvement characterizes them while microscopic findings in discharges are diagnostic

Early mucous membrane lesions

In early syphilis the exanthem commonly manifests itself on the mucous membranes Erosions in the mouth with a macular skin eruption strongly suggest syphilis while absence of oral lesions with a macular skin eruption is against *syphilis*

The mucosal lesions especially the mucous patch and the flat condyloma are very important to recognize because they are as infectious as the chancre itself The syphilitic sore throat is an early manifestation of syphilis and a sore throat that persists for more than a week without any readily apparent cause should lead to a suspicion of syphilis Any part of the pharynx or larynx to and including the vocal cords may be involved and the involvement may vary *in intensity* from merely a dry redness to an intense diphtheroid angina formation of pseudo membranes ulceration and sloughing *Hoarseness* or complete aphonia may appear without any abnormal appearance on ordinary inspection but laryngoscopy will be helpful both to establish the site and nature of the cause and also to exclude such other conditions as benign and malignant neoplasms

The mucous patch commonly associated with the mouth may also occur on any of the moist mucosal surfaces of the female genitalia and occasionally in the coronal sulcus or inner surface of the prepuce in the male This lesion is nothing more or less than a macule or maculo papule such as appears on the cutaneous surface which has become macerated and eroded by the moisture warmth and traumas to which its oral or genital situation exposes it Typically it is barely perceptibly raised surrounded by a narrow slightly reddened halo with a flat or slightly depressed surface covered by a pinkish to bluish grey pellicle This may readily be stripped off exposing a clear pinkish yellow surface Occasionally secondary infection or other factors may convert the lesion into an irregular shaped patch which may ulcerate and result in stellate scarring Ordinarily it is but a few

millimetres in diameter superficial and notoriously evanescent in character Typical mucous patches do not appear on the dorsum of the tongue for on this surface the papule does not become eroded It remains as a small, flat red lesion bearing no papillae on its surface

At the oral commissures the papular character of the mucous membrane may be more pronounced producing the typical split papule This enlarged flattened papule with a transverse fissure produced by stretching the less flexible infiltration of the papule during mouth movements is a very suspicious lesion and it is often the first symptom for which the patient consults a doctor

Still larger flat hypertrophic papules may appear at the muco cutaneous junction of the anal orifice They are usually multiple and from 1 to 3 centimetres in diameter The surface is often irregular and warty, the margins crenated and the base constricted so that it appears to mushroom over the surrounding skin Such lesions may also occur on the moist surfaces of the vulva and also on opposing cutaneous surfaces more or less macerated and moist

Other mucous membrane lesions such as herpes simplex aphthous ulcer and verruca acuminatum, beside other venereal infections and granulomas may be confused with the primary and secondary manifestations of syphilis It must b repeated in view of the highly infectious character of the syphilitic lesions on mucosal surfaces that all such lesions especially in the ano genital area, or when accompanied by constitutional or cutaneous symptoms and signs should be suspected as possibly syphilitic diagnostic procedures should include laboratory investigation and should aim at excluding syphilis before alternatives are considered

Late mucous membrane lesions

Late mucous membrane lesions of syphilis appear almost exclusively in the oral cavity and with the exception of some leucoplakias consist in variations of the gummatous process Thus we may have diffuse gummatous infiltration most frequent in the tongue but also seen in the lip which may be superficial or involve the entire substance of the organ This may involute without ulceration but producing atrophic change on the surface with loss of papillae cicatricial contractures or bands resulting in distortion Gummatous tumours are usually solitary and appear as smooth circumscribed firm masses In the tongue they most frequently involve the posterior third Gummas frequently break down with the production of nodular ulcerative lesions

Leucoplakia not in itself an essentially syphilitic lesion may be the end result of a mucous patch in which erosion has transcended the usual degrees and resulted in ulceration Leucoplakia may be produced in non syphilitic mouths by local irritation such as jagged teeth or a pipe stem or tobacco smoke Lichen planus also produces lesions which may be confused with leucoplakia but while more resistant to treatment than cutaneous lesions they will respond like the latter to arsphenamines mercury and bismuth Syphilitic leucoplakia will not yield to treatment dark field examination of scrapings will not disclose *Treponema pallidum* and the serological reactions may be negative While it may be produced by pipe smoking in non syphilitics syphilitics who smoke are more liable to it Syphilitic leucoplakia may also occur on the genital mucous membranes

Gummatous ulcerations of the lips and oral cavity exhibit a rich and varied bacterial flora but the spirochaete of syphilis can rarely be demonstrated and the serologic reactions may be negative When a gumma occurs on the hard or soft palate perforation frequently results Stokes says that perforation of the palate is the nearest approach to a pathognomonic sign of syphilis to be found on the mucous membranes and he emphasizes the frequency of Wassermann negativity in this lesion

Pre cancerous conditions

All late lesions of syphilis of the mouth should be regarded as pre cancerous It is necessary not only to distinguish cancer from syphilitic mucosal lesions but also to detect early carcinomatous change in known syphilitic lesions A positive sero logical test in the presence of a nodule or ulcer does not identify the lesion as syphilitic or exclude malignancy In a syphilitic patient microscopic study of material from a properly selected biopsy site should be made in any late lesion which presents suspicious features such as a rolled border and induration as well as infiltration or which is situated at a muco-cutaneous junction As Stokes says It is in general safer to regard a suspicious lesion on the mucous membrane and especially on the tongue as an epithelioma until it is proved otherwise Do not wait to observe the effect of heavy metal and arsphenamines or penicillin but initiate antiluetic treatment while the pathologist s report is awaited The so called smoker s patch seen as a leathery greyish white area on the lip in the oral commissure or on the buccal mucosa in a syphilitic not only demands that use of tobacco in any form must be forbidden absolutely but necessitates that the patch must be destroyed preferably by surgical means Its cancerogenic potentialities can hardly be exaggerated The sailor s quid or snoos —the small pellet of Copen hagen snuff tucked away in the gingivo labial sulcus—in general use by Scandin avian lumberjacks is quite as dangerous as smoking tobacco in its ability to produce leucoplakia and subsequent cancer

AVITAMINOSIS

Stomatitis and cheilitis and other disorders of the conjunctival buccal and pharyn geal mucous membranes have been ascribed to deficient supply or defective utiliza tion of certain vitamins Concerning some of these disturbances considerable differ ence of opinion exists as to the actual aetiological role played by avitaminosis in others it appears to be well established

Derangement of normal cornification of the epithelium is exhibited not only on the surface of the body but in the mucous membranes and is recognized as an indication of vitamin A deficiency This leads to inadequate lacrimation and dry ness of the conjunctiva and dryness of the mouth pharynx and larynx resulting in dysphagia and dysphonia

Erythroedema

Erythroedema pink disease or acrodynia has been considered by some authorities to be a vitamin-deficiency disease on account of the favourable response to paren teral vitamin B_1 (thiamine chloride) although others have considered that the

avitaminosis is secondary Here as in other avitaminoses the deficiency is not limited to one vitamin alone, but improvement is greater when a well balanced diet is taken augmented by citrus juices yeast liver and cod liver oil Stomatitis and gingivitis may occur in this disease and be confused with pellagra but erythroedema and pellagra are distinct entities the former being seen only in children there is no resemblance between the subjective symptoms and constitutional reactions of the two diseases

Vitamin deficiency of B-complex group

Deficiency of any member of the vitamin B complex group is usually accompanied by more or less deficiency of other members of the group thus the precise role of any individual member is difficult to define This principle applies not only to the vitamin B-complex group, but *according to Bicknell and Prescott (1942)* it applies to other water soluble and fat soluble vitamins as well A typical syndrome is believed to result from riboflavine (vitamin B or G) deficiency exhibited in skin and in mucous membranes Maceration and fissures in the angles of the mouth or redness due to superficial denudation at the line of closure of the lips followed by crusting are referred to as *cheilosis* *On the tongue the filiform papillae flatten out* and the colour is described as magenta In the conjunctivae circumcorneal injection of the vessels with corneal vascularization has been cited as diagnostic but this is not generally accepted In treatment of ariboflavinosis parenteral administration appears to be superior to oral administration Mild cases do well with doses of 3 milligrams daily *when the diet is otherwise adequate* In severe grades as much as 50–75 milligrams are necessary

Pellagra

Pellagra has generally been considered as an expression of nicotinic acid deficiency but again it has been experimentally shown that while a reduced supply or *utilization of nicotinic acid, riboflavine and thiamine chloride* is the chief factor in its production the pellagra producing diet is defective in respect to proteins water soluble and fat soluble vitamins and minerals

The initial symptoms are often confined to the mouth paraesthesia salivation and glossitis being the first complained of The tongue is *swollen* and dry superficial ulcers may appear and fissuring of the oral commissures *commonly* occurs Treatment is entirely dietary with large vitamin augmentations Nicotinic acid is no longer regarded as a specific but must be used preferably as nicotinamide, *in conjunction with riboflavine thiamine* and ascorbic acid Topical treatment is only palliative A considerable number of cases are due not to unavailability of a properly balanced diet but to such extrinsic causes as diet *faddism* and psychosis (psychosis can be the cause as well as the result of pellagra) which result in defective intake or disease of the digestive tract which may result *either in the patient (usually relying upon his own or other unreliable dietary regimen) failing to* take proper nourishment or in his inability to assimilate it if taken *Definite* pellagrinous symptoms have been seen in the mouth and on the skin in a *patient* literally starving to death from advanced and inoperable gastric *carcinoma* Alcoholism resulting in a deficient intake is an important predisposing *cause In the*

treatment of pellagra therefore the therapeutic campaign must include attention to such factors as these

Scurvy

The symptoms of scurvy were familiar for centuries before its essential nature first as a dietary deficiency syndrome and later as due to lack of vitamin C (ascorbic acid) was recognized The lesions of the mouth are characteristic and outstanding Swollen spongy and bleeding gums often mushrooming to such a degree that the teeth are at first obscured and later loosened and shed followed by ulceration form a picture happily more familiar in the past than in modern times Subclinical scurvy with acute and chronic gingivo stomatitis is believed to occur more frequently than is recognized and the symptoms referring to the gums have often been wrongly ascribed to imperfect dental hygiene

In the treatment of scurvy oral administration of vitamin C is sufficient 600–1 000 milligrams daily in divided doses being curative While it has been claimed that the synthetic form is inferior to that from natural sources excretion levels of ascorbic acid in the urine are the same when either form is given

LEUCOPLAKIA

Chronic irritation of the mucous membranes produces in the squamous epithelial surfaces white patches known as leucoplakia (Fig 267)



Fig 267 —Leucoplakia Grade I

Classification

In its earliest stages in the mouth and lips leucoplakia appears as a sharply defined opalescent to greyish area With further thickening the patches become white or pearly plaques These stages have been classified as Grades I and II

respectively Grade III referring to the thick, raised, rough grooved and at times verrucous lesions

Causes

General predisposing causes include notably syphilis and also the atrophic glossitis so commonly observed in prolonged and severe anaemia Local or precipitating causes include physical and chemical irritations *one or both of which* may result from rough dental surfaces or imperfect dental prosthesis and especially from the heat of tobacco smoke and its contained *chemical substances which give* to leucoplakia its popular name of smoker s patch

Site

The true tobacco leucoplakia appears most commonly on *the buccal mucous membrane of one cheek or the other, and its position indicates that the smoker* holds his pipe habitually in the opposite corner of the mouth so that the patch *marks the point where the hot stream of smoke impinges on the mucous membrane* where, as it cools its volatilized hydrocarbons including cancerogenic fractions *condense and are deposited* The frequency with which cancer of the buccal mucosa develops on leucoplakia at this site is what might be expected The smoker s patch is thus of great significance when it is recalled that cancer arising in mucous membrane is almost always of the squamous cell rapidly metastasizing variety

Differential diagnosis

Other conditions more or less resembling leucoplakia of the oral cavity sometimes may cause confusion in diagnosis Lichen planus is distinguished *by its reti* form or lace like pattern with nodal thickenings joined by tenuous white lines It never progresses to the uniform white thickened patches and typical lichen planus lesions are usually present on the cutaneous surfaces at the sites of predilection Lupus erythematosus of the oral mucosa is chiefly seen on the vermilion border of the lips and the erythematous halo seen in lupus erythematosus of the buccal mucosa does not appear in leucoplakia Thrush (moniliasis) presenting milky *patches of the buccal mucosa may be seen in adults* but a pellicle may be detached disclosing an inflammatory base and the causative organisms may easily be demonstrated *microscopically Aphthous ulcers (canker sores)* on account of their *inflammatory* character and *rapid* clinical course should readily be distinguished from leucoplakia The mucous patches of syphilis *are ephemeral and inflammatory* the serological reactions are always positive which is not invariably the case in syphilitic leucoplakia and as they are but modified *maculo papules of early* syphilis other signs of early syphilis in the skin enlarged superficial lymph nodes and constitutional symptoms are usually present

Treatment

Treatment of *leucoplakia concerns itself first with removing* local causes such as dental irritation, and absolute prohibition of tobacco in any form *If syphilis* is present it should be regarded as a probable local cause *and* of course *should be* treated Disappearance of the leucoplakia will not result, but a source of *irritation*

will be removed and the general health of the patient improved Destructive measures should be limited to the effect on the epithelium only Over treatment that produces scarring such as may be caused by chemical caustics should not be employed It is not probable that cancer will be thus produced but cancerophobes have been encountered who owed their condition to tinkering with silver nitrate Cancerophobia is not fatal but it may constitute a psychological disaster as difficult to eradicate as cancer Radium or roentgen therapy may occasionally produce good results but leucoplakia is not uniformly radio sensitive and late radiation results with atrophy and even sclerosis make malignant degeneration a possibility For smaller patches the electric cautery light fulguration with the desiccating spark or solid carbon dioxide cryotherapy are efficacious and easily controlled measures Large verrucous lesions on the tongue or hard palate are more difficult to deal with and usually require surgical measures Great caution is necessary in lesions of this type on a gummatous basis when situated on the palate If surgical measures are undertaken before the syphilitic infection is completely under control—and a negative Wassermann may not be taken as a guarantee of this—extensive and destructive mutilation may result In the earliest stages such as have been classified as Grade I removal of local irritation such as offending teeth or rough edges or dental prostheses or discontinuance of smoking are often sufficient to effect disappearance of the leucoplakia

Leucoplakia in other sites

Leucoplakia may also occur on the glans penis and the mucous membrane of the labia clitoris or vagina These lesions are sometimes confused with balanitis xerotica obliterans and kraurosis vulvae Leucoplakic vulvitis occurs in association with kraurosis vulvae but according to most authorities the diseases are quite distinct kraurosis being an atrophic process whereas leucoplakia is a hypertrophy The same distinction should be made between balanitis xerotica obliterans and the erythroplasia of Queyrat the former being atrophic and the latter hypertrophic in nature Probably because the covering of the glans and prepuce is not a true mucous membrane true leucoplakia is rare in this location

Leucoplakic vulvitis is a disease of late life The leucoplakia is similar to that seen in the oral mucosa Its aetiology is not definitely known but its association with the menopause and the fact that it is usually preceded by intense itching with violent rubbing and scratching suggests that the predisposing factor may be the general irritability of these parts during the menopausal epoch plus psychogenic factors so commonly exhibited and the local scratch trauma is the exciting factor Lichenification and pruritus of the adjacent cutaneous surfaces is a frequent accompaniment of the process Epithelioma is a frequent sequel and fissuring which progresses to ulceration usually indicates its inception Surgical treatment by vulvectomy is usually necessary although in the demonstrated absence of malignancy section of the pudendal and perineal nerves has been successful

ERYTHROPLASIA OF QUEYRAT

Erythroplasia of Queyrat is definitely a pre-cancerous condition therefore although it is rare it should be mentioned The lesions are well-defined red velvety areas which are not amenable to local treatment and progress inexorably to cancer

While popularly associated with the glans penis and the prepuce, the same condition has been described as occurring in the oral cavity The lesions should be destroyed with the cautery as soon as recognized

BALANITIS XEROTICA OBLITERANS

This may cover the entire surface of the glans with thin smooth shiny, ivory white coating, or occur as discrete white plaques It is an atrophy and its progress leads to more or less complete stenosis of the urinary meatus Epithelioma is also a possible sequel It is frequently but not invariably associated with circumcision appearing in young men in the second or third decade after the operation and it is believed that the use of mild emollients during this period may be an effective prophylactic measure Advanced cases require dilatation of the meatus with bougies or even meatotomy

KRAUROSIS VULVAE

This is a post menopausal atrophic change of the mucous membrane of the vulva which leads to sclerosis and complete atrophy of the labia minora, clitoris and frenulum their mucous surfaces becoming smooth, dry and shiny with flattening of the labia majora and stenosis of the vaginal orifice Treatment is necessary when pruritus is present If leucoplakia complicates the picture cancer is apt to develop from this hypertrophic change and vulvectomy should be performed The disease should be distinguished from the lichenification which accompanies simple pruritus vulvae, since itching is not usually present The inflammatory changes of mycotic infections should distinguish them and the causative organisms are readily demon strated by simple mycological techniques Leucoplakia is distinguished by its sharply defined border Psoriasis may occur on the vulva and its macerated inflam matory surface in this location may cause some confusion but characteristic lesions will be found elsewhere in nearly every case

VERRUCA ACUMINATA

Verruca acuminata commonly called venereal wart is generally regarded as a variety of wart produced like the common wart seen on the cutaneous surface by an unidentified virus It is contagious also auto inoculable like the ordinary wart but not necessarily venereal in origin It differs histologically from the common wart according to Montgomery in that the prickle cell layer is tremendously hypertrophied with a thin corneous layer which contrasts with the intense hyperkeratosis of the common wart This is indicated in the clinical appearance which is that of a papillary overgrowth with filiform framboesiform and vegetating projections In this grossly irregular surface skin debris and secretions accumulate producing inflammatory reactions sero purulent discharge and foul odour with free haemorrhage on slight trauma Their most common site in the male is in the coronary sulcus and in the female on the inner surface of the labia vaginal orifice and about the clitoris In the latter they may attain huge proportions and involve the entire pudendal and perineal area

Treatment

Small lesions will often disappear if strict cleanliness is practised and they are kept dry with astringent dusting powders such as thymol iodide They are more

radio-sensitive than the common wart and roentgen therapy is often successful Extensive lesions may require surgical removal with diathermy or cautery A 25 per cent suspension of podophyllin resin in mineral oil is practically a specific in lesions of moderate size but this should not be used under a redundant prepuce Circumcision should be done first It may be applied with a cotton tipped applicator taking care to confine it to the lesion to be treated A single application is often adequate

PIGMENTATION OF THE MUCOUS MEMBRANES

Of the various disorders which produce pigmentation of the mucous membranes beside metallic deposits resulting from therapy with mercury bismuth gold and silver as well as the familiar lead line of the gingivae it is of importance to note the changes which occur in Addison s disease and acanthosis nigricans Sharply outlined slaty patches and streaks such as normally occur in the mouth of the Negro are usually seen on the labial and oral mucosae As they appear rather early in the course of Addison s disease they may be of considerable diagnostic value in cases with asthenia and a variable degree of pigmentation present in the skin

In acanthosis nigricans a rarer condition almost invariably associated in the adult with visceral malignant disease and which like Addison s disease is an indication of chromaffin tissue insufficiency pigmentation of oral and other mucous membranes may appear There is a more pronounced and early tendency for acanthosis nigricans to develop in the skin of axillae and ano genital regions oral commissures nipples and flexures A very clear distinction from Addison s disease is given by the minute soft papillary overgrowth in the pigmented areas so closely packed that in the oral mucosa they produce a thickened velvety appearance Local therapy is of course of no importance but when mucosal pigmentation in a white subject especially is encountered not significantly confined to the gingival surfaces it should be regarded as monitory of serious trouble elsewhere in the system and exhaustive investigation is essential

THRUSH

This is commonly observed in young infants and is occasionally seen in older children and adults It is a mycotic infection of the oral mucous membrane the causative organism being *Candida albicans* This organism is not rarely found in the vagina sometimes producing pruritus or even vaginitis without evidence of infection elsewhere The infant infection is quite possibly derived from maternal vaginal secretions during passage through the birth canal In older children and adults it is debatable whether or not this condition and perleche which is an exhibition of the same infection in the mucosal and cutaneous surfaces at the angles of the mouth are not due primarily to a riboflavine deficiency which prepares the soil upon which the fungus flourishes The fungus is readily demonstrated in fresh smears and the growth on a slant of Sabouraud s peptone agar has a characteristic shiny gelatinous appearance Painting 2 or 3 times daily with 1 or 2 per cent aqueous solution of gentian violet is very efficacious treatment

Monilial infections by the above and other members of the genus *Candida* produce a wide variety of clinical disorders on the skin and other mucous membranes

palate The condition is probably very common but as no symptoms are produced it is often overlooked Tobacco especially pipe smoking, is of great aetiological importance Discontinuance of smoking or the wearing of a protective denture appears to be essential for a cure *The dominant feature of the disease is obstruc*tion of the orifices of the mucous glands with keratinized epithelium

CONDITIONS PECULIAR TO THE TONGUE

There are a number of conditions of the tongue some of them of frequent occurrence and some having little clinical significance and no serious implications So conspicuous are they however that they are often a source of much concern which must be allayed whenever possible

Scrotal tongue

The scrotal tongue, also known as lingua plicata grooved tongue and by other descriptive titles is in various degrees of development quite common It may be a congenital or familial character, or may succeed a superficial glossitis A median groove is common in most persons and in many cases delicate grooved markings may be distinguished radiating from this like the lateral veins of a leaf In some *instances these may be so deep that the tongue presents a series* of folds and grooves like the rugose skin of the contracted scrotum This may attract little *attention until lodgement of food debris followed by decomposition and* consequent irritation occurs The condition may be seen in syphilis pre natal or acquired but is by no means diagnostic In aged patients years of *pipe smokin*g may have served in some degree as an aetiological factor but it is more p obable that prolonged and excessive smoking and a generally unclean mouth serve as aggravating rather than causative circumstances The only treatment apart from promoting good oral hygiene is the postprandial practice of swabbing out the deep sulci which are sometimes inflamed with a cotton wrapped toothpick moistened with hydrogen peroxide

Geographic tongue

The geographic tongue is also known by other descriptive terms *appropriate to* its various appearances and behaviour such as wandering rash circinate eruption or erythema migrans or transitory benign plaques of the tongue *The condition is* not rare in the experience of the author by whom it has been seen almost exclusively in adults although it has been stated to be most common in children *The eruption is most frequently seen* about the margins of the tongue It has the appearance of an extremely superficial exfoliation or atrophy of the filiform papillae in *two or more patches which are sharply outlined* They frequently coalesce producing an appearance on the dorsum of the tongue of an archipelago or of irregular continental masses and on the *margin or tip they merge to produce* a red scalloped border (Fig 269) The size and position of the red patches often seems to alter from day to day Itching and stinging sensations are *sometimes* complained of but when these symptoms are much complained of it is suspected that there is a large psychogenic element probably born of apprehension *It is often* hard to convince persons who are cancer conscious but ill informed that anything so dramatic in

its appearance and behaviour and unaccompanied by any degree of discomfort is not cancer or at least pre-cancerous The condition is obstinate and its course is marked by exacerbations remissions and even intermissions

Aetiology and treatment

The aetiology is undetermined and various empiric treatments such as constitutional remedies local mild astringents as well as very small doses of radiation from a radium plaque or roentgen rays have been employed with varying degrees



Fig 269 —Lingua geographica Patient had also moderately advanced pulmonary tuberculosis

of success The writer having used these measures is of the opinion that the disease runs its own course to its predetermined end the success in relieving subjective discomfort depending upon the degree to which the physician has succeeded in impressing the patient and success in terminating the disease in applying therapy just before its natural termination As Hippocrates has said Blessed is the physician who sees the patient last

Glossitis rhomboidea mediana

Another condition which when first discovered arouses needless alarm is an oval or lozenge shaped elevation on the dorsum of the tongue in its middle *third* This

lesion may be discovered accidentally by the patient just as a person sometimes discovers in the course of some lingual gymnastics before a mirror his circum vallate papillae In either case never having observed these structures before he instantly concludes that they are new and menacing phenomena which arrived overnight and he rushes to a doctor This lesion known as glossitis rhomboidea mediana appears in the midline and is usually well defined anteriorly but pos teriorly may merge gradually with the surface of the tongue about the circumvallate papillae Its surface is usually slightly elevated but may be irregular or verrucous It is firm almost to the point of induration Since it does not give rise to any symp toms it often escapes observation for a long time Although its histological structure



Fig 270 – Glossitis rhomboidea mediana Patient aged 10 years

indicates that it is inflammatory in origin and results in sclerosis no cause has been discovered It has been stated to occur only in adults but the accompanying photograph shows it in a 10 year old child (Fig 270) No treatment is necessary

Lingua nigra

Lingua nigra or the hairy black tongue is a rare condition produced by over growth of the epidermis of the filiform papillae resulting in their attaining lengths of 0 5–1 5 centimetres The colour varies from pale sepia to black and at times the papillae may be confined to the distal portion of the tongue only They have the cohesive appearance of the hairs of a wet smooth haired terrier Various organisms have been found in association with this condition but no causal relationship has been established It has no relation to the condition of dogs known as black tongue The disease disappears spontaneously after some months or years and if good oral hygiene is observed no treatment is necessary

Moeller s glossitis

Moeller s glossitis or chronic superficial excoriation of the tongue is serious on account of its intractability and the grave effect on the health of the patient which may be caused by the pain preventing to a large extent the taking of any but the blandest foods Occasionally no solid food whatever can be tolerated It is a chronic inflammatory disease of the surface of the tongue characterized by intensely red sharply defined patches In them the filiform papillae have lost much of their epithelium and the fungiform papillae are swollen The condition is subject to remissions but at the height of its activity severe pain results from contact with hot or cold foods spices acids or salt Burning pain may be present when food is not in the mouth An aetiological relationship has apparently been established in isolated cases with contact allergy systemic allergy nutritional deficiencies or neurologic disorder It is unrelated to the red atrophic condition of the tongue known as Hunter s glossitis sometimes seen in pernicious anaemia It is distinguished readily from the geographic tongue in which sensory disturbance is uncommon and of little moment There is no specific treatment and the results of therapy so far have been discouraging

Effects of dental prostheses

Much has been heard in recent years about the effects of galvanic currents generated by the presence of dissimilar metals in the mouth in various forms of dental prostheses Whether such currents actually produce burning sensations or alterations on the surface of the mucous membranes is much debated The existence of such currents is unquestioned and is demonstrable by a microgalvanometer It is considered probable that the only way in which such electric currents can act is indirectly by introducing cataphoretically metallic ions set free from amalgams into the tissues adjacent to fillings and bridge work which set up a contact dermatitis

CHEILITIS

Inflammation of the mucous membrane of the lips may result from many causes among the commonest being exposure to physical agents such as sunlight cold and wind contact dermatitis from cosmetics and sometimes from food stuffs and from local infectious conditions The cause of these forms is usually readily apparent and the remedy not far to seek

Cheilitis glandularis

There are certain special types of cheilitis among which are to be mentioned cheilitis glandularis which is an adenomatous condition of the mucous glands usually of the lower lip The tumid glands present as small elevations with dilated duct orifices from which exudes a mucoid or muco purulent occasionally clear serous fluid which frequently gums the lips together during the night Whether the condition is purely a catarrhal inflammation of infectious origin or whether it has a congenital hypertrophy of gland tissue as its basis is undecided Occasionally it has been accompanied by a severe catarrhal condition of the oral and pharyngeal mucosa Treatment is in general unsatisfactory

Cheilitis exfoliativa

Cheilitis exfoliativa is apparently a labial form of seborrhoeic dermatitis Scales and crusts form on the vermilion border of the lips which exfoliate and re form In a good proportion of the cases redness and greasy accumulations of scale are seen in the grooves lateral to the alae nasi scurfiness in the scalp and a sticky crumbly marginal blepharitis In such cases some success has been obtained with the local use of sulphur ointment, intramuscular injections of crude liver extract and occasional cautious use of roentgen therapy These measures however appear to give best results only when in use and relapse is apt to occur a few months after their discontinuance

Fordyce's disease

Fordyce s disease is a very common condition most often exhibited on the lips but also seen along the level of the dental closure line on the buccal mucous mem brane as far back as the first molar tooth and occasionally on the prepuce coronal sulcus and vulval mucosa On the lips it consists of one or two rows of minute yellowish points barely perceptibly elevated It is most often seen in young male adults No cause is known and it has been thought to be a congenital defect It sometimes gives rise to disquietude when the patient discovers it but although the condition is persistent the patient s apprehension may readily be allayed and no treatment is necessary

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CHAPTER 38

CANCER OF THE MUCOUS MEMBRANE

D E H CLEVELAND

CANCER of the mucous membrane is commonest and of greatest importance in the oral cavity and lips but also may occur on the mucous surfaces of the male and female external genitalia and the anus The importance of early diagnosis leading to prompt and adequate therapy cannot be over emphasized

Cancer of the mucous membrane is rapidly progressive and metastasizes early 90 per cent of the growths b ing of the squamous-cell variety while other equally dangerous forms such as adenocarcinoma melanoma and sarcoma account for the balance

INCIDENCE AND AETIOLOGY

The importance of cancer of the mouth is shown by the fact that about 4 per cent of all cancers originate there The enormous preponderance in the male sex of cancer of all parts of the mouth over its incidence in the female in some degree parallels the greater subjection of the oral mucosa to chronic irritation in the male such as that produced by tobacco contact in tobacco chewers and cigar smokers or hot smoke in pipe smokers Leucoplakia has a similar aetiology and this as well as its significance in relation to cancer is discussed on page 614 Syphilis of the oral mucosa especially in its late stages has a definite relationship to cancer being a source of chronic irritation Excessive exposure to sunlight especially when com bined with dry winds is an important aetiological factor in cancer of the lower lip in those whose occupation entails constant exposure In Australia where such conditions obtain in high degree Paul (1933) Molesworth and others have emphasized this and have drawn attention to the occurrence not infrequently in that country of cancer of the upper lip as well It has also been suggested that vitamin B-complex deficiency may be a contributing factor in cancer aetiology by producing chronic stomatitis and glossitis

CLINICAL FEATURES

While the patient is usually the first to discover the existence of suspicious signs of cancer of the mouth the earliness with which it is observed varies greatly and in accordance with the site On the lip it may be observed in its incipiency whereas in the anterior parts of the oral cavity or tongue the lesion may be felt as a roughness or irregularity which leads to further investigation On the base of the tongue po terior palatal and faucial regions the lesion may become far advanced and large before the patient suspects its presence It may then be discovered through the development of subjective symptoms or even by the presence of an enlarged cervical lymph node

Cheilitis exfoliativa

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loupe It may be only a fissure or excoriation in a leucoplakic patch or under a slough there may be a deep necrotic ulcer with vertical or undermined crater walls There may be little or no discomfort before secondary infection appears From this stage onward pain and interference with function advance rapidly and the disability varies in character with the situation of the growth (Fig 271)

Metastatic enlargement of the regional lymph nodes may appear early while the primary lesion is still very small but the size and character of these metastases alter rapidly with the development of secondary infection when they may become fluctuant and ulcerate through the skin surface (Fig 272)

DIFFERENTIAL DIAGNOSIS

Tuberculous ulcers and syphilis

The two important conditions with which cancer of mouth and lips is most likely to be confused are tuberculous ulcer and syphilis both primary and late but acute inflammatory conditions such as Vincent s disease herpes simplex or aphthous ulcer and biting injuries of tongue and cheek also may be confused with cancer Syphilis and the tuberculous ulcer have already been discussed in relation to the diagnosis of cancer of the mouth and tongue In the case of a suspected acute in flammatory or traumatic lesion which is persistent one should not let more than two weeks elapse before biopsy

Chancre of the lip

In discussing inflammatory lesions of the lip it must not be forgotten that cancer may have an appearance almost identical with that of chancre The patient may have been exposed to syphilis and the serological reactions may be positive for syphilis while the typical pearly border of epithelioma may be absent Delay in diagnosing primary syphilis is less serious than delay in diagnosing cancer of the lip The patient s life may be hazarded in the latter case by delay One should not await the results of the serological investigation in diagnosing a lesion which is probably chancre but possibly cancer Dark field examination must be done immediately but undue manipulation such as squeezing the lesion for serum must be avoided Light scraping only is permissible This brings out another important diagnostic point whereas the chancre will submit to consider able manipulation without bleeding epithelioma bleeds readily on the slightest injury Suspicion thus aroused and failure to find spirochaetes demand that a section for biopsy must be taken without delay

Tuberculous ulcer

Tuberculous ulceration at the muco cutaneous junction of the anal orifice may occasionally simulate cancer The history of intestinal tuberculosis pain tenesmus and bleeding and perianal swelling with perforation of the skin and the establish ment of fistulae usually reveal its character whereas squamous cell carcinoma of the anus usually has a rolled border and extends outward from the anal mucosa to invade the cutaneous surface The tuberculous ulcer is shallow with a granulating base is extremely tender and generally tubercle bacilli can be demonstrated

Wherever the lesion occurs on the mucous surfaces its earliest appearance is that of an indurated plaque which soon ulcerates The degree depth and lateral extent of the induration are variable, so that it is not safe to exclude the possibility of cancer

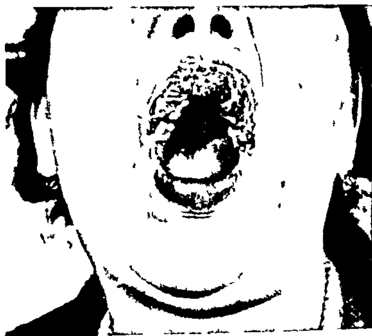


Fig 271 —Carcinoma originating in gingival mucosa spreading to lip in a diabetic Chinese woman



Fig 272 —Carcinoma originating in coronal sulcus Metastatic involvement of left inguinal lymph nodes and overlying skin

by the apparent absence of infiltration While the coarsely granulating surface with the raised, rolled margin is commonly regarded as characteristic it must be remembered that the ulcer may not be more than a couple of millimetres in diameter with a linear border so delicate that its elevation can only be detected with the aid of the

TREATMENT

Positive serological findings for syphilis in the presence of leucoplakia of the genitalia must not be accepted as excluding cancer Syphilitic leucoplakia recognized as such should make the examiner doubly alert to the possibility of cancer

TREATMENT

Treatment of cancer of the mucous membranes is confined to the employment of roentgen rays radium or surgery either singly or in any combination The therapeutic approach must be carefully planned and decided upon in accordance with the concerted opinion of pathologist radiotherapist and surgeon

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Anal chancre and syphilitic condylomas

The anal chancre and flat syphilitic condylomas are commonly mistaken by the patient for haemorrhoids but satellite adenopathy in the inguinal region distinguishes the former, and the relatively dry, glazed dull red chancre does not present the nodular character of the cancerous ulcer The surface of condyloma latum while moist and macerated, teems with spirochaetes like the chancre and does not bleed with slight injury as the epithelioma does

Cancer at the anal orifice

This is a squamous cell carcinoma of the anal mucosa and while relatively infrequent is highly malignant *in contrast to the adenocarcinoma arising from the rectal* mucosa It is therefore of the highest importance that diagnosis be established *promptly by histological examination in* every case which does not present unmistakable evidence of syphilis or tuberculosis

Cancer of the external genitalia

This cancer is usually a squamous cell carcinoma arising from the glans penis inner surface of the prepuce (Fig *272)* the inner surface of the labium majus the labium minus vestibule (especially about the urinary meatus) or clitoris The rarity of cancer of the glans in the circumcised is worthy of remark The youth of the patient is not a weighty consideration against the diagnosis of cancer Chronic irritation (its chronicity, as in the oral cavity and lip being more important than the source of the irritation) is a very important factor Both atrophic changes such as kraurosis vulvae, and hypertrophic changes such as leucoplakia and the erythroplasia of Queyrat are regarded as *pre-cancerous* conditions Changes in the character of these lesions such as irregular granular hypertrophy or fissuring *usually indicate the inception of malignant change Early and rapid* enlargement of the inguinal nodes is common in penile carcinoma

Cancer of the genital mucous surfaces

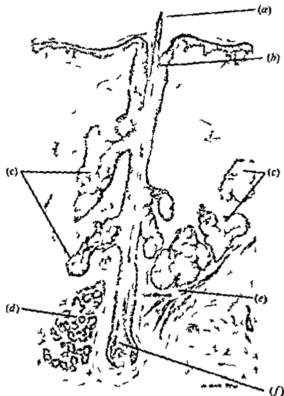
Cancer of the genital mucous surfaces is not rare and its clinical diagnosis seldom offers much difficulty the early *appearance of ulceration* with fungating indurated margins and indurated base and foul floor being a conspicuous feature Biopsy must not be delayed

Tuberculosis of the glans penis

Rare and almost always secondary to uro genital *tuberculosis* tuberculosis of the glans penis may simulate carcinoma very closely

Aids to diagnosis

The dark field examination which should be practised on every nodular or nodular ulcerative lesion of the *external genitals and the satellite* adenopathy distinguish the chancre while the bacteriological examination of smears and skin tests will usually quickly identify the other venereal ulcers



Section through skin showing (*a*) shaft (*b*) follicle (*c*) sebaceous glands (*d*) sweat glands (*e*) arrector pili muscles (*f*) hair bulb

PLATE VII

CHAPTER 39

DISORDERS OF THE SCALP

John Kinnear and G B Mitchell Heggs

INTRODUCTION

In disorders affecting the scalp there are in general three groups to consider— those in which the hair alone is affected those in which the skin of the scalp shows the chief pathological change and those in which skin and hair are both affected

The hair alone is affected in alopecia areata leucotrichia trichorrhexis nodosa and *pili torti* *In psoriasis and in infections such as* impetigo erysipelas herpes zoster and warts the skin is particularly involved Benign tumours usually interfere very little with hair growth although very large ones may lead to apparent baldness by stretching the skin On the other hand, as squamous cell and basal cell epitheliomas spread they lead to baldness by complete destruction of the skin In the early and late stages of syphilis and in tuberculosis of the skin (whether lupus vulgaris or the papular necrotic tuberculides) the pathological process may affect all of the skin including the hair follicle and thus the hair The hair follicle is *primarily affected in* acne necrotica furuncles and folliculitis decalvans

The hair is abnormally dry with little lustre in congenital disorders such as the *various types and degrees of ichthyosis It becomes dry and dull* and grows slowly in states of severe malnutrition and cardiac incompetence Similar changes are seen in myxoedema and in other less definite endocrine disorders Infection of the skin and of the shaft of the hair by fungi and yeasts in ringworm and seborrhoea capitis sooner or later leads to patches of short dull brittle hairs

The common symptoms are loss of hair (alopecia) itching and scurfiness (dandruff) Less commonly the patient is worried about the tendency of the hair to be unusually dry and brittle Parents may worry over the loss of lustre and slow growth of their children s hair and at all ages change of colour may be a problem

HAIR GROWTH

Hairs are normally falling out breaking off or being removed by brushing all the time and there is in most people a gradual slight thinning of the hair after the middle twenties The rate of growth varies with the state of the general health and endocrine activity probably being most active between the ages of 12 and 25 years In many people the growth is apparently more rapid when stimulated by natural sunlight The average life of a hair is from 2 to 6 years Partial or complete loss of hair during a severe illness may occur and is usually followed by the return of good hair, which is not necessarily of the same colour as before The hair that grows after epilation of the scalp by x rays is often more curly than the original growth

This is only temporary and the hair gradually resumes its former state Partial overdosage may result in a thinner regrowth with shorter and more brittle hair either generally or in patches (Fig 273)

Head gear appears to slow hair growth in some cases and in others the friction produced by tight bands scarves tied in turban fashion and caps has led to thinning of the hair over the friction areas A style of hair dressing which results



FIG 273 —X ray alopecia following radiotherapy of ringworm as a child twenty years previously note complete baldness in centre of irradiated circle but some hair growth at the periphery of the circle where the dosage should be less

in constant drag on the roots of the hair may lead to more or less permanent alopecia of the areas affected for example the *alopecie liminaire des femmes*

A baby sometimes develops a habit of rubbing its head from side to side or banging it on the pillow this leads to thinning of the hair over the occipital region and in some cases even to a friction dermatitis on the scalp Usually this type of alopecia disappears when the habit is dropped

There is an idea among the laity that cutting tends to inhibit growth and that singeing is beneficial because it stops the hair from bleeding There is little to support this view however and in fact hair growth is frequently stronger in men after they have had their hair clipped very short or even shaved close to the scalp

even small doses of x ray irradiation The use of x rays may lead to unfortunate legal proceedings since if the treatment is unsuccessful the patient may regard the x rays as the cause of the permanent alopecia Thorough massage into the whole scalp once a week of a little of an ointment composed of equal parts of oil of cade lanolin and Vaseline followed next day by shampooing helps to arrest the



FIG 274 —Ophiasis

fall of hair Topical oestrogen therapy has in some cases apparently produced regrowth of the hair in cases of alopecia areata and alopecia totalis Oestrogens are well absorbed from the scalp and pass directly into the blood stream Toxic effects therefore may occur particularly if large areas of the scalp are treated The most frequent signs of toxicity are increased pigmentation of the nipples and enlargement of the breasts This treatment should not entail regular violent daily rubbing of the scalp however which may lead to the type of baldness described above in babies

Congenital partial or complete baldness may occur alone or as part of an ectodermal defect In the latter case development of *nails* and *dentition may* be faulty or absent In cases in which the deficiency is *in* hair growth only the eyebrow hairs and eyelashes may be affected as well as those of the scalp

LOSS OF HAIR (ALOPECIA)

Alopecia areata should be considered in any cases of sudden baldness in which the skin of the scalp appears to be pink glistening and healthy The loss may be in small patches measuring from several millimetres to a few centimetres in diameter, or involving the whole scalp The diagnosis is clinched by the presence of short hairs with a slightly bulbous hyperpigmented distal end—the so-called exclamation hairs On the apparently healthy skin there will often be seen a fair or white downy growth *indicating that stronger hair growth will follow* These downy hairs usually become pigmented but not in every case Alopecia areata is frequently associated with atrophic or dystrophic changes in the nails They may be opaque striated or furrowed or they may show depressions white specks and even complete leuconychia (Macleod 1933)

The presence of the exclamation hairs is usually an indication that the process is active and that more hair will fall

In all cases of alopecia an important part of the treatment is the maintenance of the patient s morale at such a level that he can carry on at school or work Complete loss of hair, by increasing the apparent age of an individual may impede his chances *of employment In the early cases careful arrangement* of the remaining hairs may hide the bald patches but often extra artificial hair or even a wig is essential Fortunately this is no longer a crippling expense for the individual

The aetiology of this condition is uncertain It can occur in several generations of the same family and is in many cases a recurrent affection There appear to be several common factors In a large proportion of patients it is usually possible to find a close association between the onset of the baldness and shock or an acute anxiety state The only complete loss of hair over one night which has been *personally reported to me occurred during the night before the patient* had an operation

Commonly associated with this group is anxiety over pending examinations and financial or domestic crises In a small group there appears to be an associated strain of vision or hearing An attempt to relieve this strain by the supply of *adequate spectacles or a hearing aid may help When practicable* improvement of lighting at work or even a change of occupation to one which is less trying is justified

In a number of cases septic foci are present and although it is *difficult to prove* the association between the focus and the hair change when possible the focus *should be eliminated*

There is however a group of cases of alopecia areata in which there is no discoverable septic focus no anxiety state of note or other possible cause or coincidental disorder

Ophiasis is a form of alopecia areata in which the baldness progresses in a serpentine fashion round the hair margin (Fig 274) The prognosis is less favourable than in the ordinary type

The treatment of alopecia areata is essentially the elimination of all possible causal factors *followed by rubefacient treatment of the affected* area of the scalp including massage the use of blistering agents ultra violet light thorium X and

even small doses of x ray irradiation The use of x rays may lead to unfortunate legal proceedings since if the treatment is unsuccessful the patient may regard the x rays as the cause of the permanent alopecia Thorough massage into the whole scalp once a week of a little of an ointment composed of equal parts of oil of cade lanolin and Vaseline followed next day by shampooing helps to arrest the

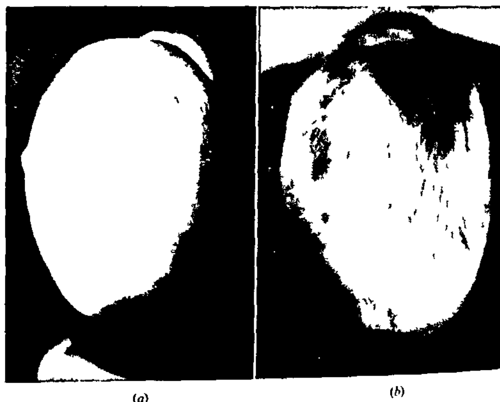


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Alopecia universalis (Fig 275) may occur, however at any age Many cases are associated with worry and shock others with systemic disease but in a large number there is no discoverable cause At the moment the most popular conception is a change in the endocrine balance This view is supported by the fact that a



(a) (b)

Fig 275 —Alopecia universalis (a) before and (b) after treatment with thorium X the left side of the scalp has had several treatments the right none but a few tufts of hair are growing on the right side also

number of such cases develop few hairs at puberty and after the second month of pregnancy, and in others inunction of an ointment containing stilboestrol has been followed by hair growth

Seborrhoea

Seborrhoea oleosa is common at puberty gradually followed by seborrhoea sicca in which there is a diffuse branny scaling all over the scalp Such a scalp is usually excoriated on account of itching and scratching and rapidly becomes secondarily infected This process is accompanied by a gradual development of baldness on the vertex and scalp at the junction of the frontal and temporal regions

Bacterial infection

Superficial bacterial infection is really an impetigo of the scalp and may in certain cases be most marked in the post auricular sulcus This intertriginous dermatitis is intractable and necessitates very careful local and systemic treatment The scalp should be cleansed with 1 per cent Cetavlon (cetyltrimethylammonium

bromide) in water to remove crusts pus and any other chemicals that may be on the scalp Then local application of 1 per cent iodine in 90 per cent alcohol or 5 per cent Dettol combined with a course of oral sulphamerazine is quite a satisfactory method Another consists in penicillin lotion—for five days only because of the risk of sensitization—combined with a course of penicillin injections After the infection is under control eczematization is sometimes helped by the application of 0 25 per cent silver nitrate in water twice daily with a camel hair brush to the weeping areas only In very obstinate cases Kinnear recommends an occlusive



FIG 276 —Streptococcal infection following chronic otitis media and involving the scalp eyebrows eyelids and the rest of the skin

dressing such as Viscopaste or Unna s paste applied once a week for about a month (Kinnear 1935) The lack of response to treatment and trial of many preparations often precedes sensitization of the skin of the scalp and severe eczematous reactions

Infection of the hair follicles by staphylococci and streptococci (Fig 276) leads to reactions ranging from superficial pustular lesions to sycosis of the scalp or boils (see Chapters 15 and 16) Pustules oozing and cru ts on the scalp may be simple impetigo but it is important to exclude pediculosis capitis tinea due to trichophyton infection and the secondary stages of syphilis

Folliculitis decalvans is a chronic bacterial infection of the hair follicles leading to progressive permanent baldness *Staphylococcus aureus* is usually the infecting organism Culture to see to which antibiotic the organism is most sensitive is recommended In one of my cases the organism was resistant to penicillin but sensitive to sulphathiazole

Ringworm of the scalp

The most important cause of baldness and hair change in children from the point of view of the patient parent school and public health authorities is ringworm of the scalp It is still quite common in children before puberty and may occur in epidemic form

In ringworm the hairs lose their lustre or sheen and are less elastic so that they point in whatever direction they were last brushed combed or pressed They are shorter than the neighbouring healthy hairs and may be seen in small or large areas of the scalp frequently in annular or disc like shapes varying in breadth from a few millimetres to several centimetres or covering the whole scalp

The common clinical types in general are those in which the hair is infected with very little scalp involvement and may therefore be easily missed and those in which there is a hyperkeratotic reaction in the epidermis, with irregular branny scales forming a circular scaly patch The majority of these cases are *Microsporon audouini* infections a small number may be caused by *M felineum* (of cats) In certain cases quite long hairs may be infected with ringworm before breaking off and without any marked involvement of the scalp

Cases in which there is a violent follicular reaction with redness oedema and the formation of pustules and crusts (kerion) are comparatively uncommon today and are usually due to trichophyton infection

In cases in which the hair is infected with *Trichophyton acuminatum* the hairs break off level with the skin leaving a black dot This hair stump must be differentiated from the exclamation hair of alopecia areata by the usual microscopic examination

Favus

Achorion schœnleinii infection of the skin and hairs (favus) is characterized by the presence of tiny yellow scales around the hairs sometimes with very little associated erythema or vesiculation In certain cases there are sulphur yellow crusts or masses of fungus and scales which are depressed in the centre like a shield lying on its convex surface (scutula) There may be a musty or mouse like odour near the patch and in other parts of the scalp atrophic scars may mark the site of previous infection Although formerly common in Scotland the condition is now rare in Great Britain where the cases are often atypical (Russell 1947)

It is a safe plan to remove a few suspected hairs and either examine them direct under a microscope after soaking them in potassium hydroxide or send them for pathological examination to a laboratory When a suitable clinic is within easy reach all doubtful cases should be examined under an ultra violet lamp with Wood s glass filter as so many isolated infections varying from a few hairs to large patches which might otherwise be missed can be detected by this

method It also shows parents the extent of the infection and encourages them to carry out the appropriate plan of treatment This method of diagnosis is of no value in trichophyton infection

Psoriasis

Psoriasis frequently affects the scalp In many cases there is a uniform branny scaling similar to seborrhoea sicca in others there are a number of circumscribed slightly thickened disc like lesions Another type consists of a number of raised limpet like lesions on the scalp which can be more easily felt than seen and have been compared with lumps of mortar In all cases the hairs grow through the psoriatic lesions and there is little temporary or permanent baldness The lesions may follow the line of the parting possibly because of the action of combing Along the frontal hair line and around the ears indefinite red patches covered with thin scales occur The distribution is the same as that seen in seborrhoea capitis and in some syphilitic eruptions Treatment of this condition is given in Chapter 14

Syphilitic infection

An important cause of patchy loss of hair is syphilitic infection in or near the hair follicle This is more frequently detected during the secondary phase and is nearly always associated with one or more of the following headache malaise vague pains in the limbs sore throat or the presence or history of eruptions on the skin (*see* Chapter 18) The bald area differs from that of alopecia areata in being incomplete with a few irregularly scattered hairs remaining producing the so called moth eaten appearance Ulceration of the scalp in tertiary syphilis leads to complete baldness

Pulling out of hair

In certain circumstances the habit of pulling the hair out may lead to marked baldness There is a group of people who seem to enjoy pulling one or more scalp hairs out during a pensive mood A similar habit may be detected in a normal child in a ward trying to get the attention and treatment given to other children who may be suffering from serious disease or ringworm In other cases it is seen in adults in association with dyspepsia wasting and a palpable abdominal tumour (intra gastric hairball)

Skin injury

Complete permanent loss of hair may follow severe injury to the skin There is of course no hair growth after the complete destruction of a hair follicle so third degree burns severe infections and deep ulceration of the scalp are certain to be followed by some baldness Certain causes of partial or complete loss of hair are much less common now In the days of inflammable combs severe scalp burns followed by permanent baldness were not unusual and before machinery was more adequately guarded complete scalping was less uncommon than it is today

Pseudo pelade

This is a rare form of patchy baldness (Fig 277) The hair follicles are destroyed leading to oval or multiform patches of bald dry cicatricial skin In the patches there may be two or three hairs holding on to life with a collection of scales around

Alopecia with itching scratching and eczematization

Itching and scratching of the scalp in babies is most frequently associated with a mild seborrhoea capitis, or part of a general infantile eczema (*see* Chapters 10 and 12) In children, particularly girls, the first possibility to consider is pediculosis capitis, and in fact at any age particularly in men and women with long hair, this must always be considered in the differential diagnosis (*see* Chapter 21)

Seborrhoea capitis —In men irritation on the scalp around and in the ears is part of a seborrhoea capitis It may be associated with hypertension, and aggravated by a diet rich in substances which make the face and scalp flush particularly alcohol, coffee, and highly seasoned foods



FIG 278 – Lichen simplex nuchae

Lichen simplex —In women particularly at the menopause a variety of lichen simplex is seen at the nape of the neck (Fig 278) The predominant symptom is itching and at first there is only redness of the skin to be seen Later a more clearly defined patch can be seen with the normal crease marks exaggerated and in the centre scaling and excoriation with some loss of hair The skin is slightly thickened Such a patch may occur alone or in association with unilateral or symmetrical lichen simplex at the side of the neck The irritation waxes and wanes with the patient s mental state being precipitated and exacerbated by perturbation frustration and real anxieties In addition to the application of antipruritics administration of sedatives by the mouth and radiotherapy a number of these cases are assisted by endocrine treatment

Acne necrotica —Severe irritation is present in acne necrotica This is a primary folliculitis in which necrosis occurs leaving depressed scars like those left after

smallpox Lesions occur on the forehead and in the scalp In some cases there is intense irritation in others it is the presence of the pustules and the threat of spreading baldness which cause the chief anxiety A number of cases respond well to systemic penicillin therapy and others to a rest from work balanced diet and a change of air In one case each relapse occurred with a temporary anxiety state

ENDOCRINE FACTORS

The distribution of hair growth is influenced by the androgen–oestrogen balance and is luxuriant on the scalp in both sexes at puberty In addition it is more greasy at puberty and towards the end of the intermenstrual period returning to normal again after the period Oestrogen stimulates growth on the vertex and when the balance with androgen is altered it may lead to loss of hair in the so-called male fashion This commences all along the line of the forehead and becomes more pronounced over the area marking the junction of the frontal and temporal areas producing two complete notches in the scalp This tendency to loss of hair is normal in males of most families after the age of 30 years but may commence very much earlier without any associated apparent endocrine abnormality

Increased activity of the sebaceous glands affecting the whole of the scalp even when no hairs remain leading to excessive greasiness on the one hand or seborrhoea sicca on the other is seen in men over 60 years of age This condition is less frequently seen among women of the same age

The hair is fine and downy in Fröhlich s syndrome (dystrophia adiposo genitalis) In the Lorain Levi type of infantilism which may be associated with coeliac disease congenital or acquired heart disease hypertrophic biliary cirrhosis of the liver chronic interstitial nephritis polyorrhomenitis syphilis tuberculosis and malaria the hair may be similarly affected In mongol children the hair is usually of a light colour tending to be dry short and brittle with early baldness around the vertex Cretins usually have brittle coarse and scanty hair

In myxoedema the hair of the head is dry and lustreless falling out in a patchy fashion This hair loss is also present over the outer third of the eyebrows and is associated with pale puffy facies baggy eyelids and dry rough skin the skin looks oedematous but does not pit

Although alopecia may also occur in association with hyperthyroidism adequate therapy including thiouracil may not result in the return of the hair

In some cases of alopecia universalis there is apparently an endocrine factor as in those women who grow hairs on a bald scalp and their eyebrows when pregnant and then lose the hair a few months after the confinement This is comparable with the temporary hirsuties of pregnancy

THE EFFECT OF PHYSICAL AND CHEMICAL AGENTS

In adults the hair may be dry and the scalp itch as the result of the degreasing action of soaps soap substitutes shampoos the heating required in curling and waving and chemical changes consequent upon repeated bleaching dyeing water waving and the use of certain cold permanent wave solutions

In men fixing creams and greases tend to make the hair dry both by their own action and because of the thorough cleansing that is necessary to remove them

Thorough brushing of the scalp as a daily routine for several minutes is probably one of the most efficient ways of increasing the lustre of the hair as this increases the circulation of blood in the scalp, produces a transient erythema and removes perifollicular scales and plugs With the passage of time the strength of hair growth and the secretion of sebum are improved

Thorough brushing is made an important routine in those countries where women still wear their hair long but Savill (1935) points out that it is the scalp or head that should be brushed vigorously, the hair being treated more gently



FIG 279 —Iodide eruption on the scalp

The skin of the scalp is affected in many of the common dermatoses (Chapter 34) It is hypersensitive to soap and to the tickle of wool or fur in many cases of infantile and established atopic eczema The scalp is also involved in widespread eczematous eruptions associated with an external irritant or following intravenous therapy with gold or inorganic arsenicals (Fig 279)

Acute dermatitis of the scalp

A common cause of acute dermatitis of the scalp is the application of hair lotions and dyes to which the patient may be sensitive After a few hours the scalp feels hot it burns and on examination it looks red after a few more hours the patient notices oedema of the eyelids tightness of the skin all over the scalp

and burning or itching of the ears face and neck it feels as though the scalp is going to burst

The condition may then be followed by the production of vesicles oozing and the formation of crusts Secondary infections occur on some areas or even all of the scalp leading to pustules scabs and enlargement of the cervical lymphatic glands toxaemia and fever

This acute dermatitis of the scalp necessitates rest in bed sedation and the application of soothing lotions Before prescribing lead lotion in these cases it is a good plan to make certain that the patients have not been using a sulphur preparation on the scalp previously as this may lead to the production of black lead sulphide deposits The administration of antihistamine drugs such as Benadryl Anthisan Antistin and Phenergan may also be necessary

When infection has occurred early initiation of systemic penicillin intra muscularly or one of the sulphonamide drugs is advisable in order to minimize the damage to hair growth It is safest to use a weak solution of an antiseptic such as perchloride of mercury 1 10 000 in water Dettol Listerine Glycothymoline or eusol rather than one which leaves a deposit which may increase the tendency to crust Those which might lead to a discoloration or to further sensitization of the epidermis should be avoided when possible Cetavlon 1 per cent in water is very useful in assisting the removal of the crusts in some cases in others gentle inunction with warm olive oil is more satisfactory

In very severe cases it is a good plan for the patient to lie face upwards on a bed or couch with the head just over the end and a basin underneath Cold lotions can be allowed to trickle over the scalp and through the hair or the whole scalp can be given a cold douche It should be remembered that in such cases the patient is often extremely anxious and probably frightened and may show a tendency to faint The position described is therefore more satisfactory than the usual one with the head bent forward over a basin

The subacute and chronic phases of eczema are associated with itching scratch ing excoriation of the scalp and irregular loss of hair Antipruritics such as phenol 1 per cent menthol and tar extracts are usually satisfactory They should be com bined with small doses of phenobarbitone or codeine during the day and appro priate doses of one of the following at night Seconal Soneryl Medinal or chloral hydrate Sometimes however radiotherapy is necessary

DIET

In considering the effect of diet on the hair one must include the whole of the pilo sebaceous follicles and therefore consider the tendency to seborrhoea This is diminished when a healthy person is able to take regular exercise in light clothing able to sunbathe in the fresh air and to enjoy a physiologically complete life including adequate sleep In many people the hair tends to curl and grow better on a holiday especially in hot sunny climates but on the other hand it occasionally grows longer and thicker during spells in bed necessitated by accidents or opera tions without serious systemic disorder

The diet which is correct for a schoolboy or recruit under training is often in correct for a man following a sedentary occupation The former rarely complains

TABLE

Some Common Disorders of the Scalp

Age Group	Alopecia (baldness)	Pruritus (itching)	Scaling Dandruff Scurf	Papulo-Pustular Lesions	Colour and Lustre Changes
Infants	Congenital ectodermal defect Congenital alopecia	Habit of rubbing head Pillows too soft and warm Infantile eczema Itching elsewhere due to insect parasites Papular urticaria	Crusta lactea Seborrhoea capitis Ichthyosis	Secondary syphilis Bromides or iodides Bacterial infection	Pigment defect Pili torti Ichthyosis
Children	Ringworm Alopecia areata Ichthyosis and congenital alopecia Habit of pulling out hair Mongols cretins Pili torti *Monilethrix*	Seborrhoea capitis Pediculosis capitis Ringworm	Seborrhoea capitis Ringworm Psoriasis	Secondary syphilis Bromides or iodides Bacterial infection	Persisting pigment defects Albinism Leucotrichia (alone or following alopecia areata) *Glittering* hair in pili torti *Lustreless* hair in ringworm systemic disease and malnutrition
Adults	Alopecia seborrhoeica Premature male type of baldness Alopecia areata Endocrine changes (menopause myxoedema hyperthyroidism) Effects of acute and chronic infection Syphilitic infection Pseudo pelade Lupus erythematosus Atrophy following radio therapy Lichen atrophicans Pityriasis rubra pilaris	Seborrhoeic eczema of the scalp Chronic coccal infection of scalp or retro auricular region Dermatitis due to bleaches dyes shampoos Scalp changes associated with hypertension gout Pediculosis capitis Diabetes Leukaemia of the skin Lichen nuchae Dermatitis herpetiformis Acne necrotica	Seborrhoea sicca *Psoriasis* Effects of bleaches or shampoos Hair therapy Lupus erythematosus Headgear *Malnutrition* Systemic disease	Secondary syphilis *Bromides or iodides* Bacterial infection Dermatitis herpetiformis and herpes zoster	Premature greying familial or due to psychological trauma pernicious anaemia thyrotoxicosis Leucotrichia alone or following alopecia areata *Green* hair due to mercuric sulphide (e g application of mercurial scalp lotion followed by local heat as in a permanent wave or contact with sulphur soap) *Lustreless* hair in malnutrition systemic disease myxoedema or due to headgear or hair therapy Yellow tinge in hair may be due to resorcin mercurial and spirit lotions or perhaps metal curlers

of the condition of the scalp but a scurfy head and brittle hairs or alternatively an excessively greasy head perhaps associated with *seborrhoeic dermatitis (see* Chapter 12) is quite common amongst sedentary workers the endocrine aspect *has been considered elsewhere in this chapter*

In general excess of carbohydrates unless balanced by exercise *encourages* seborrhoea and needs extra absorption of the various components of the vitamin B complex The anti *retentional diet recommended by* Barber (1939) *contains a* relatively high proportion of protein and nucleoprotein with restriction of carbo hydrates and fats plenty of green vegetables and fruits and restriction of sodium chloride and the fluid intake Patients with a *seborrhoeic tendency should be en* couraged to try to follow the lines of such a dietary in spite of the shortage of meat and of adequate supplies of sea fish nowadays A healthy régime should be recom mended and in the rather fat bloated type of *individual Diuretin by the mouth* may also be of help

As well as *the prescription of additional* vitamins to encourage *hair growth* it is a good plan to prescribe inorganic arsenic by the mouth In a number of patients this appears to encourage the growth of stronger and longer hairs It is very important *to remember however that there is a limit to this beneficial effect* Prolonged absorption of arsenic leads not only to fine mottled pigmentation of the skin particularly the parts covered by clothing but also to irregular thickening of the nails and the distal portions of the *hair and nails have been found to contain arsenic deposits*

PIGMENT OF THE HAIR

The colour of the hair depends upon the varying proportions of pigment granules and diffuse *pigment which may be present The white in hair or feather structure* is due to failure or absence of pigment formation in the follicle before cornification takes place (Strong 1921 Savill 1935) *It* is almost absent in the very fair those *with grey hair and albinos Greying of the hair tends to occur very early* in some families which are otherwise healthy and like alopecia may render employ ment difficult and lead to the early use of hair dyes The change of colour can be accelerated by the use of ammonia alkalis and spirit lotions or delayed by the use of brilliantines It should always be remembered that the patient seeking advice on account of premature changes in the hair is frequently so anxious and worried as to be liable to many of the dangers of over treatment

In many people the change of the colour to grey seems to be hastened by shock worry or prolonged mental strain The only case of complete and sudden greyness that I have seen was associated with an unexpected release from a very long mental strain Premature whiteness of the hair sometimes occurs *in thyrotoxicosis* and fine prematurely white hair is an almost *constant feature of pernicious* anaemia

The yellow tinge sometimes seen in grey or white hair may be due to the presence of resorcin in hair lotion which can quickly change white hair to yellow or the *prolonged effect of small* doses of other chemicals even ordinary soap

Care is indicated in the prescription of lotions for those with white hair because of the possible colour changes Such changes may be due to the substance *prescribed* or to a mixture with other preparations which the patient may be using at the time

After alopecia the hair is often of a different colour and may be grey or white Again it is quite common to see vitiligo and leucotrichia in the same patient

Unilateral greying of the hair has been known to follow severe injury to the brain

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CHAPTER 40

DISORDERS OF THE SKIN AFFECTING THE NAILS

HENRY CORSI

APPLIED ANATOMY AND PHYSIOLOGY

THE NAIL is a translucent plate of keratin growing from a matrix situated ventrally to it under the proximal nail fold The nail i attached to the nail bed by some sixty longitudinal ridges in the epidermis These ridges become more marked forward as the end of the finger is approached so that the nail is much more firmly attached at its distal end than it is at and just beyond the matrix where the attachment is feeble Therefore following a blow a haematoma forms easily near the nail fold but not so easily near the end of the finger If the blow is more severe the nail tends to become detached from under the nail fold and to hinge up on its strong epidermal attachment at the distal end The epidermis under the end of the nail is much thickened in manual workers and adds strength and support to the free edge In many animals both carnivora and herbivora the epidermis under the free edge forms a veritable horn (cornu soli) In those who lack this epidermal support at the end of the nail (either because they do not use their fingers much or because they scrape the supporting epidermis away) the end of the nail tends to split horizontally This horizontal splitting is common Improvement follows physical use of the upper limbs especially of the fingers (in typewriting piano-playing and so on) and following the administration of small doses of arsenic o er a long period The epidermis does not contain calcium so that any favourable effect on the nails from taking calcium is unlikely

The finger nails grow their length twice in one year the toe nails grow a good deal more slowly Arrest of growth has been noted in severely paralysed or fractured limbs During pyrexia the nail may grow faster but it also grows thinner so that a furrow results (Beau 1846) Inanition relative or complete is probably the cause of the furrow and in this connexion we may note that Beau s lines may follow attacks of diarrhoea or sea sickness Wilks in 1888 related how he developed the lines each time he crossed the Atlantic The furrow appears from under the nail fold about a month after the acute illness and grows forward until it is cut off some months later According to its position it is possible to calculate with fair accuracy when the illness occurred and the subject is likely to be astounded at the doctor s detective abilities

NAIL CHANGES IN GENERAL DISEASES

The nails on the drum stick fing rs occurring in some chronic pulmonary and circulatory diseases may be twice the normal size and are curved longitudinally as well as from side to side It is notable that the curve was first described by Hippocrates but he omitted to mention the hypertrophy of the finger itself

In some forms of anaemia the nails tend to be spoon shaped, and this koilonychia may be the clue which leads to an examination of the blood In long standing pruritic diseases the nails may show an extraordinarily high polish This occurs in patients who scratch continuously, and who at the same time are using a powdery lotion such as calamine Scratching is done with the dorsum of the nail rather than

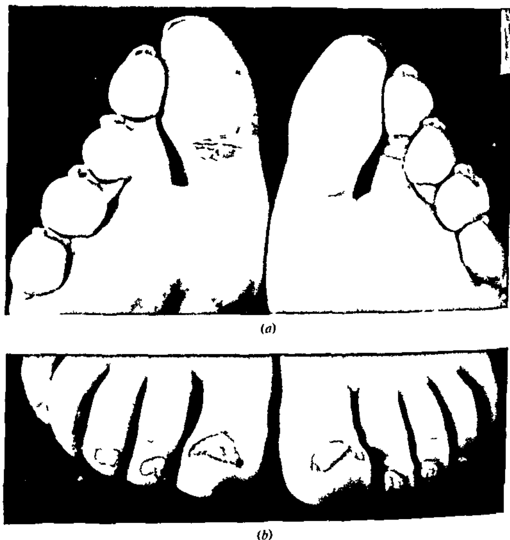


FIG 280 —Psoriasis of toe nails (a) from beneath foot (b) from above foot showing upper surface

the end of the finger so that the end of the nail becomes bevelled off especially in the central line

NAIL CHANGES IN SKIN DISEASES

The nails show deformities of growth in any skin disease in which the matrix happens to be affected (eczemas extensive psoriasis (Fig 280) lichen planus syphilis and so on) There are no particularly characteristic appearances which

need concern the non specialist In most instances the diagnosis is obvious from visible signs elsewhere but in psoriasis the nails alone may be affected (Fig 281) In minor degrees of the affection there will be seen a series of tiny pits In more severe degrees the nail may be entirely covered with small pits so as to resemble the surface of a thimble Such an appearance is almost pathognomonic of psoriasis

NAIL CHANGES DUE TO INFECTIVE CONDITIONS

Fungus infections

The nails of some persons (fortunately rare) may become infected with a fungus (Fig 282) This results in a heaping up and fragmentation of the nail plate Diagnosis must be made by microscopical examination Pieces of nail are left in liquor

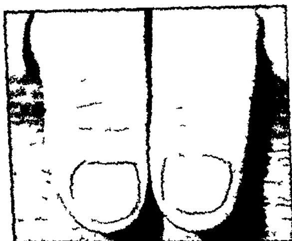


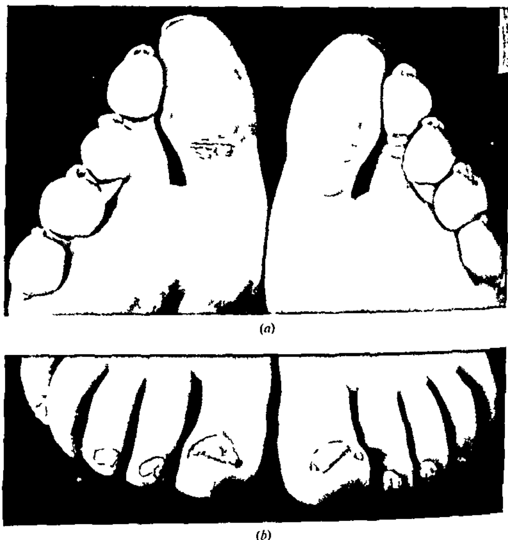
FIG 281 —Psoriasis affecting thumb-nails showing flaking at edge note discoloration in corner of right thumb-nail

potassae for a day or two after which they soften and are easily squeezed flat with a cover slip The discovery of mycelium is usually easy but it is important not to use too strong a light and to manipulate the condenser accurately Mycotic infection of the nails is very difficult to cure avulsion is almost always necessary and even then after the most careful after treatment recurrences are frequent Transference of the infection to others does not occur nevertheless aliens suffering from the disease find it very difficult to gain admission to the United States of America

Paronychia

Paronychia is the most common disease affecting the nails It consists of a sub acute inflammation of the nail fold The nail fold is found detached from the underlying root of the nail plate so that a fine probe can be introduced under it for 3 4 millimetres The nail fold is slightly reddened and forms a bolster like swelling round the base of the nail As a result of intermittent attacks of inflammation in and

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(a)

(b)

FIG 280 —Psoriasis of toe nails (a) from beneath foot (b) from above foot showing upper surface

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NAIL CHANGES IN SKIN DISEASES

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2 or 3 minutes after which it is pulled out with forceps This must be done daily for a fortnight then twice a week for a while This simple treatment is successful in some cases Should it fail an attempt is made to cure by using pure carbolic acid The acid is pushed up under the nail fold on cotton wool as with the spirit but it is done once a fortnight only A rather brisk inflammation follows each treatment but subsequently the nail fold tends to become fixed down to the nail plate When this occurs success is achieved Should this method also fail recourse must be had to treatment by superficial x rays Three or four applications of 150 r at intervals of a fortnight usually cure provided of course that the patient does not begin putting her hands in water again as soon as improvement sets in

SUMMARY

To sum up the changes in the nails which any medical practitioner should be familiar with are Beau s furrows Hippocratic and splitting nails and koilonychia An acquaintance with the appearances found in psoriasis and eczema is likely to be useful and it may be necessary for him to treat paronychia All other conditions including ringworm of the nails are rare They are not easy for the non specialist to recognize and their treatment is almost always very difficult without the aid of superficial x rays or other special procedures

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around the matrix, the nail grows up more or less deformed (Fig 283) The disease affects almost exclusively women and mostly women not of the working class It will be found that the patients are such as have to put their hands in water a good deal—but it is not often seen in charwomen A variety of organisms can be grown

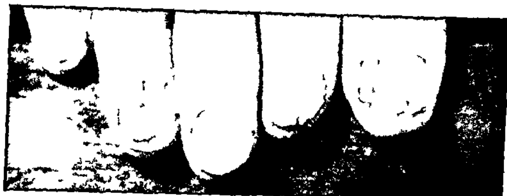


Fig 282 —Ringworm of nails

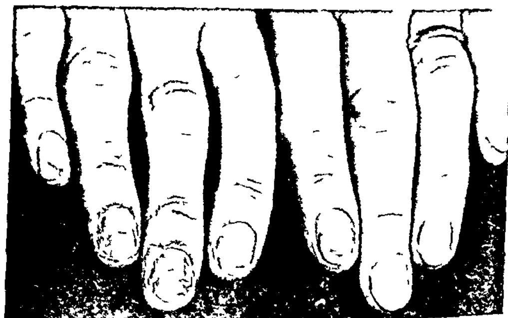


Fig 283 —Monilial paronychia note the absence or partial absence of the cuticle and its association with a bolstering of the posterior nail fold The onychia is secondary to the inflammatory change and is most marked on those fingers where the infection has persisted longest

from the nail folds in paronychia, including staphylococci *Bacillus coli* and monilia, the findings have no influence on prognosis and their presence is probably unimportant Cure is not easy Except for normal washing purposes it is essential to keep the hands out of water only when the patient has been sufficiently convinced of the importance of this can one proceed to treatment A wisp of cotton wool is dipped in spirit pushed up under the nail fold with a fine probe and left for



FIG 284 — Contact dermatitis due to penicillin cream

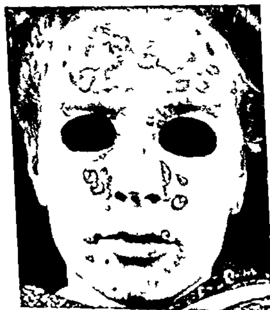


FIG 285 — Bullous dermatitis of face and lids

CHAPTER 41

DISORDERS OF THE SKIN WITH OCULAR INVOLVEMENT

ALICE CARLETON

DERMATITIS OF THE EYELIDS

WHEN the diseases of the skin which we are accustomed to see scattered over the body, are limited instead to a very restricted area the diagnosis of so small a patch may not be simple Naturally, the eyelids being a part of the general surface, are liable to be affected by the same dermatoses as is any other area of the skin In practice however, the eyelids show a particular liability to dermatitis This may be a form of seborrhoeic eczema characterized by a persistent redness with greasy scales but without much oedema unless the skin is irritated or secondarily infected Seborrhoeic eczema of the lids frequently involves the conjunctiva with consequent photophobia and lacrimation The eyebrows tend to be covered with scales and the scalp is often scurfy

Hazen (1944) analysed 32 cases of dermatitis of the lids and ascribed three of them to seborrhoeic dermatitis The remaining 29 were due to irritant contacts To make certain of the diagnosis he went through a routine of general examination and careful questioning of the patient in order to obtain a clue followed by patch testing with the supposed irritant and elimination with observation of the results The taking of the case history needs the qualities of a Sherlock Holmes The work habits hobbies and surroundings of the patient must be analysed in relation to the time of day or week or month when exacerbations occur and the places where they occur Patients often have fixed and irrational ideas as to what constitutes an irritant substance and will never mention some which they dismiss as out of the question Two examples will suffice A lady complained of dermatitis of the right side of the face including the eyelids which occurred whenever she visited a friend in the country Plant contacts drugs cosmetics and many other possibilities were considered and discarded before she happened to mention in passing that she used to help her friend by taking over the milking of a cow A patch test with cow hair was negative The patient who was now becoming convinced that this was the right clue came back for a further test bringing hair from the suspected cow This gave a positive result and after milking was abandoned the condition cleared up permanently This case illustrates the difficulty in getting the patient to mention all possible contacts and also the unimportance of negative patch tests The curious specificity of the reaction is paralleled by two of Hazen s cases in which irritation was caused by the skins of Florida oranges but not by those of Californian oranges As the second example we may take Hazen s case of a man whose history suggested that he was sensitive to carbon paper Patch tests gave negative results but when a waste basket containing the paper caught fire the smoke produced a severe recurrence of his lid eruption and subsequent elimination of ink and carbon paper led to a rapid cure

Over this area there are scattered papules pustules and occasionally comedones There is intermittent flushing of the face especially after meals Ocular symptoms range from blepharitis and hyperaemic conjunctivitis to a keratitis which may be very severe and may lead to ulceration and scarring There is no parallel response of the face and eye in rosacea Severe ocular disturbance may be associated with scarcely visible facial lesions and quite commonly gross disturbance of the face may exist when there is no eye trouble whatever Rosacea is seen most often in women between the ages of 35 and 45 years and more particularly in worried nervous socially insecure types This psychic background may cause gastric disturbance and hypochlorhydria or achlorhydria is commonly found There is no specific local treatment for this condition Sulphur lotion may be prescribed for the face The eyes may be protected by dark glasses and if necessary boric acid lotion instilled or zinc ointment smeared on the lids The general treatment is more important Many patients respond to an acid mixture (20 minims of dilute hydro chloric acid given thrice daily) They should be advised to eat small quantities at a time with no fluid at meals Hot soups sauces condiments curries and all foods liable to cause flushing should be forbidden The consumption of tea and coffee should be reduced and these drinks should be taken weak and tepid An effort should be made to improve any background of worry or anxiety

We may now consider some dermatoses which sometimes though rarely involve the lids alone They do not form a group and the selection of the site may be haphazard Figs 287 and 288 show unusual cases in which pityriasis rubra pilaris and primary syphilis have affected the lids

LUPUS ERYTHEMATOSUS

Chronic discoid form

This may simulate an infective blepharitis but the margins of the lids are dry in stead of moist and are covered with fine adherent scales which are difficult to remove The appearance is more violaceous and less inflammatory than that of blepharitis and is better defined and less greasy than in seborrhoeic dermatitis The clinical picture slowly alters The scaly erythema is replaced by a fine atrophy with some destruction of the lashes and irregularity of the lid margin The conjunctiva may be involved and in some rare instances there have been years of irritable con junctivitis and photophobia before the appearance of characteristic skin lesions allowed a diagnosis to be made It need hardly be said that the body should be carefully searched for confirmatory lesions in all suspected cases

Acute generalized form

This is a severe toxaemia which may elicit reactions of a non specific nature in any part of the body It is unnecessary to discuss here the retinitis and choroiditis which are only part of the general grave condition

Since lupus erythematosus is easily made worse local treatment should be very gentle Cleansing of the conjunctiva with boric acid lotion or Albucid soluble eye drops should be followed by the application of a bland ointment such as unguen tum acidi borici smeared on the lids The aetiology and general treatment of the condition is discussed in another chapter

Of the 29 cases of contact dermatitis of the lids mentioned above 11 were due to cosmetics directly or indirectly applied Powder, face cream eye shadow and hair dye were all direct contacts Nail polish was the cause in 4 cases Many people sleep with their hands folded under the cheek and the fine skin of the lids is apparently more susceptible than are the fingers to this irritant Six of the 29 cases were due to various plants, 7 to medicaments including eye drops and creams 2 to soap powders, 1 to dog hair 1 to carbon paper and 1 to hearth polish

Contact dermatitis of the lids gives rise to more swelling oedema oozing and fissuring than does seborrhoeic dermatitis (Figs 284 and 285) Similar effects may follow the taking of drugs, or the ingestion or inhalation of other allergens Sometimes a drug produces a chronic, pigmented erythema (fixed drug eruption) which persists long after the drug has been stopped This is especially the case with phenolphthalein Local treatment should be simple and cautious or it may do more harm than good Pads wet with boric acid lotion may be laid on for 5 minutes after which calamine ointment is applied The patient should be persuaded to touch the lids as little as possible If there is persistent dry erythema small doses (20 r) of x rays may be given Cases of seborrhoea respond well to aniline dyes for example 1 per cent crystal violet in water or in calamine cream A scurfy scalp should, of course receive appropriate treatment

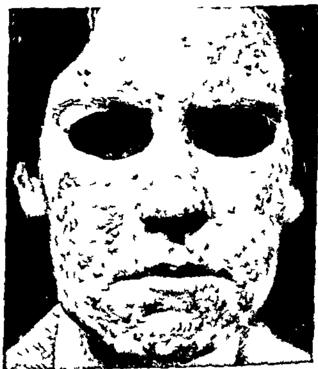


Fig 286 —Rosacea

ROSACEA

This is characterized by a patchy redness of the centre of the face that is the middle of the forehead and chin the nose and the adjoining parts of the cheeks (Fig 286)

LICHEN RUBER PLANUS

This is rarely limited to the lids When the disease is in its early stage the presence of waxy lilac papules with filigree scaling makes the diagnosis easy But later the papules may be replaced by a persistent network of sepia pigment looking rather like an erythema *ab igne* This has been confused with lupus erythematosus and the best guide lies in the history of the primary lesions Local treatment is of no avail, but in most cases spontaneous improvement occurs in time (Michelson and Laymon 1938)

SARCOIDOSIS

There is much support for the view that this disease is a peculiar reaction of the host to a tubercle bacillus though it is not clear whether the peculiarity resides in the host or in the bacillus In typical cases of sarcoidosis the tuberculin reaction is negative In a significant number of patients however active tuberculosis develops and this is heralded by an alteration of the reaction from negative to positive Any part of the body may be affected With such a background it is not surprising that the eye may show a rich variety of responses in sarcoidosis The commonest ocular form is an irido-cyclitis which could only be diagnosed if there were characteristic changes in other organs A striking clinical picture is the association of this with a chronic enlargement of the lacrimal and parotid glands known as Heerfordt s syndrome The lids are rarely alone in being affected but any form of cutaneous sarcoidosis may spread and involve them especially the little miliary lupoid papules known as Boeck s sarcoids or the annular atrophic patches with raised keratotic rims and a superficial suggestion of tinea Boeck s sarcoids may regress spontaneously No effective treatment is known

SMALL TUMOURS OF THE LIDS

The lids may be the site of small tumours of which three may receive special mention The virus of molluscum contagiosum produces pale skin coloured papules about 0 5 centimetre wide with a depressed plug in the centre The papules are easily destroyed by the electrocautery or by a pointed match stick dipped in trichloracetic acid

Xanthoma infiltrations have a special affinity for the medial ends of the lids where they form characteristic flat topped papules pale chamois leather in colour They can be similarly destroyed but further infiltration with xanthoma cells is not unlikely

Milia are tiny white cystic excrescences often found on or near the lids They can be punctured and expressed

JUVENILE CATARACT

Juvenile cataract is associated with three skin diseases—poikilodermia vasculare atrophicans scleroderma and allergic eczema The condition is in each case a genetic inheritance (Carleton 1943)

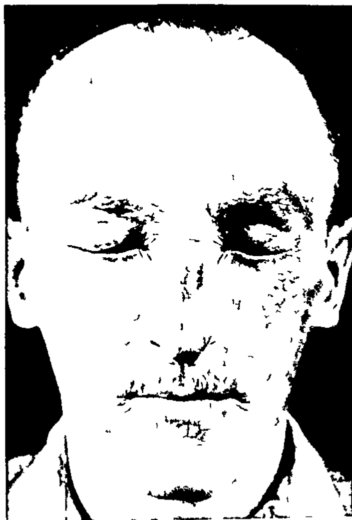


FIG 287 —Pityriasis rubra pilaris with atrophy and loss of eyelashes

FIG 288 —Primary chancre



skin of the thigh general desensitization is said to follow repeated vaccination with ordinary smallpox vaccine The writer has had little success with either method

Herpes zoster

This follows the invasion of a sensory nerve by a virus The affected nerve or group of nerves by its terminations in the skin or mucosae causes cell injury leading to vesiculation The disease is not transmissible by inoculation or by any other known method But specific antibodies have been found in the serum of patients who have had herpes zoster and in no one else hence its virus origin is proved It may follow injury to the nerve as by trauma injection of the Gasserian ganglion for tic douloureux compression of a nerve by a tumour or syphilitic radiculitis but this injury is only a factor in predisposing the nerve to the virus invasion Sometimes this spreads to the motor fibres of a nerve and ocular paresis has been described in herpes zoster ophthalmicus This localization is due to the invasion of the first division of the fifth nerve by the virus The skin area of this nerve extends from the vertex to the lids including the bridge of the nose Owing to the loose subcutaneous tissue of the lids there is generally considerable swelling and oedema and keratitis conjunctivitis or irido-cyclitis may be present The subsequent atrophy occasionally produces a curious mottling known as vitiligo iridis Since there is a much greater degree of inflammatory reaction in herpes zoster than in herpes simplex the cutaneous vesicles may become purulent haemorrhagic or even necrotic with correspondingly severe scarring.

Treatment

There is no specific treatment for herpes zoster and the great variety of drugs which are said to be beneficial is an indication that no one of them is entirely satisfactory We have to consider local treatment abortive general treatment and treatment of the neuralgia which precedes accompanies or follows the eruption Local treatment is designed to occlude and protect the vesicles therefore a paint or crystal violet lotion or bland powder under a dressing is suitable For general treatment one might try diphtheria antitoxin 5 000 units given once and repeated if necessary in 2 days or pituitrin 1 millilitre subcutaneously given 3 times at 48 hour intervals The neuralgia is often a serious problem Sutton (1939) claims very good results from the 1–5 milliampere galvanic current The positive electrode is placed near the affected ganglion and the negative electrode is gently drawn proximally along the course of the nerve Treatment is for 10–15 minutes every day One might imagine that blocking the nerve would relieve the pain but this procedure affects neither the pain nor the eruption The ganglion is invaded by the virus therefore if blocking is to be attempted it must be by injection around the ganglion

Erythema exudativum multiforme

As the name implies this is a polymorphous eruption made up of macules papules weals or bullae with a tendency to fuse into polycyclic patches It may begin insidiously or with fever arthralgia and albuminuria A similar picture may be brought about by a wide variety of allergens or toxic substances drugs sera foods intestinal break-down products infections and infectious fevers due to

PRIMARY VESICO BULLOUS ERUPTIONS OF INTERNAL ORIGIN

Between the dermatoses so far discussed there is no obvious interconnecting link But one group of skin diseases does stand out—the primary vesico bullous eruptions of internal origin in which invasion of the ocular tissues is so often found that some common liability of the cells must be presumed In some of the group a virus and, in others an unknown toxin exercises a destructive action on the mucosae or the deeper cells of the epidermis, with resultant cellular liquefaction This appears to release a physico chemical force which in turn increases capillary permeability and attracts the filtrate as well as the local tissue fluid to the injured area In this way a vesicle is formed When the hydrostatic pressure within this vesicle has reached a certain point, the movement of the fluid is checked Whether or not the vesicle breaks down to form an oozing erosion depends largely upon the thickness of the roof Naturally, in the conjunctivae and other mucous membranes the covering is thin and the vesicles are correspondingly transient so that the clinical picture shows a raw oozing surface whereas the skin may still exhibit intact vesicles But though the distribution and clinical appearance in the different diseases of this group are varied and characteristic histologically we can only distinguish grades of severity in an essentially similar reaction

The vesico bullous skin diseases which affect the eye are herpes simplex herpes zoster, erythema exudativum multiforme ectodermosis erosiva pluriorificialis foot and mouth disease Behcet s triple symptom complex dermatitis herpetiformis acute and chronic pemphigus and the Senear Usher syndrome

Herpes simplex

This is characterized by recurrent outbreaks of small grouped vesicles which dry crust and heal as a rule without scarring The outbreak if not infected or irritated by injudicious treatment lasts about 10 days The lids the conjunctiva or the cornea may be affected Sometimes a recurrent irido cyclitis is the sole clinical expression

Positive results with fluid taken from a vesicle and inoculated into the cornea of a rabbit show that the disease is due to a virus But it is unusual among virus diseases in its failure to confer immunity Indeed the same patch of skin is often affected at each outbreak The virus has been isolated from the mucous membranes saliva and blood of laboratory animals and it has been suggested that it lives a saprophytic existence and becomes pathogenic only when conditions are auspicious It has been estimated that 50–75 per cent of people are carriers but in susceptible individuals the cells are sensitized to the virus by a great variety of agents such as cold, sunburn drugs food menstrual disturbance infectious foci or parasites In other words the life of the cell is altered in a way that opens the gates to attack by the virus with resultant liquefaction and the formation of vesicles

Local treatment consists in painting with an aniline dye or sealing with collodion General treatment may be directed towards the elimination of the sensitizing agent as for example by abstaining from certain foods or avoiding extremes of temperature or efforts may be made to raise the resistance of the cell Specific desensitization has been attempted by the inoculation of fluid from a herpetic vesicle into the

skin of the thigh general desensitization is said to follow repeated vaccination with ordinary smallpox vaccine The writer has had little success with either method

Herpes zoster

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bacteria or protozoa Opinion is still divided as to whether the disease originally described by Ferdinand Hebra is specific or merely a variety of this reaction Those who support the former theory hold that the toxic rash is bright red and not bluish like Hebra s erythema multiforme that it is rarely annular never affects the mucosae and often involves the trunk, whereas Hebra s disease appears characteristically on the extremities and may involve any or all of the mucosae, the conjunctiva, the mouth the respiratory tract or the gastro intestinal tract The eyes develop a



Fig 289 —Ectodermosis erosiva pluriorificialis (Stevens Johnson syndrome)

pseudo membranous or vesico papular conjunctivitis which may cause conjunctival shrinkage or secondary uveitis

This predilection for certain areas is based presumably on local biochemical peculiarities Seasonal recurrence is not uncommon suggesting again a cellular alteration which renders the tissue acceptors open to the advances of the allergen

Ectodermosis erosiva pluriorificialis (Stevens Johnson syndrome)

It is doubtful whether ectodermosis erosiva pluriorificialis (eruptive fever with stomatitis and ophthalmia) is a severe form of erythema multiforme or a specific

disease It begins dramatically with fever and severe toxaemia, and an outbreak of multiforme like lesions on the forearms and hands the legs and feet and the face (Fig 289) The mucosae are soon or even initially involved with widespread vesicles which break down leaving raw crusted bleeding areas which are exquisitely painful The whole of the mouth may be stripped so that feeding through a tube is necessary The vagina and urethra may form one large eroded area The nasal lining may be similarly affected The most serious feature however is the conjunctivitis which in 7 out of a group of 9 cases led to total blindness During the first week or two the patient looks gravely ill photophobia is marked and eating and micturition are agonizingly painful In 3–6 weeks the toxaemia diminishes the skin goes back to normal and apart from the eyes all is well In a case of the author s in which total blindness followed an oesophageal ulcer developed some months later No causative organism has ever been found

Treatment

Treatment i non specific The lids should be held open with tiny strips of sticking plaster to prevent adhesions Nicotinic acid has been strongly recommended (Klauder 1937)

Foot and mouth disease

This is a virus disease usually acquired from infected animals or more rarely by the drinking of infected milk It begins with slight fever and malaise and then the lips become bright red swollen hot and dry The tongue is thick and coated and yellow vesicles appear which become turbid and rupture The neighbouring glands are enlarged and tender Inflammatory vesicles now develop on the hands especially around the nails and may also arise between the toes The disease may spread from the mouth to the nose and conjunctivae It is obvious that the picture is not unlike ectodermosis pluriorificialis though much less severe but if the diagnosis is difficult guinea pig inoculation with its positive result in foot and mouth disease will decide

Treatment

There is no sp cific treatment but painting with 2–3 per cent gentian violet in water is advised as being very helpful

Behcet s triple symptom complex

The diseases we have just considered have been acute but transient The above condition is on the contrary characterized by its extreme chronicity In 1937 a Turkish dermatologist called Behcet (1937 1938 and 1939) described a morbid entity in which the mouth the eyes and the external genitalia are affected In the mouth little round or oval patches succeed one another their centre breaking down to form an ulcer with a yellowish slough which heals in a few weeks but is succeeded by others The skin or mucosae of the external genitalia show similar ulcers which begin as herpetic ve icles or papules Conjunctivitis keratitis or episcleritis may develop but the most characteristic ocular lesion is a recurrent hypopyon iritis The three sites may be affected simultaneously or separately and the mouth and genitalia may be attacked years before the eyes become involved There

are no constitutional symptoms Now that a number of cases have been described it appears that there is a tendency for other associated but clinically different skin lesions to develop Some *patients had recurrent deep seated* nodules like erythema nodosum, some had acneform lesions and others had little scattered boils No cause has ever been found and treatment in most cases has been unavailing

In cases *of buccal and vulvar ulceration only*, without ocular involvement, that is in the syndromes described by Lipschutz and Sutton a correlation has sometimes been observed between the appearance of the ulcers and the menstrual periods In such cases, Bishop (1948) has had some hopeful *results with large doses of oestrogen* (2 pellets, each containing 100 milligrams of stilboestrol implanted and left in *for 2–3 months*) *Under* this treatment, the ulcers disappeared but recurred later Further administration of oestrogen resulted usually in the disappearance of ulceration

Dermatitis herpetiformis

Here again we have an extremely chronic or at best a relapsing disease In its characteristic *form small shotty vesicles are found scattered over patches of mild* dermatitis These patches are markedly symmetrical in their distribution The vesicles are found histologically to lie mainly beneath not in the epidermis and this may account for the way they withstand the ferocious scratching they receive for the disease is very irritating When a patch recovers marked pigmentation often remains Eosinophilia of the vesicular fluid and of the *blood is a feature* but it varies a good deal and cannot always be demonstrated An odd point about the condition is the special sensitivity of the cells to iodine and, to a *lesser extent* mercury *It is important therefore* to avoid iodine preparations A case was reported in which the conjunctivae and nasal and pharyngeal mucosae were covered with little vesicles It was not recognized as dermatitis herpetiformis and the surface was painted with iodo tannic spirit Owing to the iodine sensitivity this caused an extreme reaction and blindness followed No cause has ever been found but *here again as in erythema multiforme and herpes simplex* a sensitizing extra factor is often present One reported case always reacted to eating chocolate Another patient had intestinal worms and got better when they were *eliminated There is* a form which occurs in pregnancy generally in the fifth or sixth month It tends to get worse and to start earlier with each succeeding pregnancy

In many cases the disease can be satisfactorily controlled and even though not often eliminated by prolonged small doses of one of the sulphonamide drugs The aim is by weakening the supposed toxin to raise the resistance of the cells *rather than to eliminate the toxin while leaving the cells still sensitive* Hence small doses are given (1 tablet twice daily) These small doses can be taken for long periods without disturbance the blood picture should however *be reviewed* from time to time

Pemphigus

This was a term originally applied to a number of diseases characterized by bullae Several of these have now been more suitably renamed *Pemphigus neonatorum* has become bullous impetigo of infants Pemphigus solitarius is a streptococcal bulla It is doubtful how much or how little connexion there is

between the four diseases still called by the name of pemphigus Only two of the four show a tendency to involve the eye

Acute febrile pemphigus

Acute febrile pemphigus most often affects butchers or other people dealing with dead animals The disease begins fulminatingly with severe constitutional symptoms and bullae starting on the hands spread rapidly to the rest of the body including both internal and external mucous membranes Death occurs in about 87 per cent of cases

Chronic pemphigus

In chronic pemphigus or pemphigus vulgaris large bullae appear in crops on an apparently healthy skin with no redness or surrounding areolae Though this is primarily a skin disease and affects the eyes only in the later stages this order may be reversed and a bullous stomatitis or a chronic catarrhal conjunctivitis has been known to precede skin lesions by periods of 1–6 years The resulting adhesions may in time lead to symblepharon or ectropion There is no effective treatment for pemphigus and the prognosis is bad The bullae must be kept clean and they often heal under a cover of Tulle Gras but others follow A high protein diet should be given as in any disease involving much epidermal loss

Senear Usher syndrome (Senear and Usher 1926)

Opinion is still divided as to whether this is a form of pemphigus with an onset resembling lupus erythematosus or a complication of lupus erythematosus resembling pemphigus Probably in our present stage of knowledge we should do best to say with Senear and Usher themselves that a group of toxic eruptions exists possibly due to a single agent which may produce lupus erythematosus in one patient erythema multiforme in another and pemphigus in another or that these conditions may even follow one another in the same patient The acute disseminated form of lupus erythematosus which strongly resembles if it is not identical with the Senear Usher syndrome begins dramatically often with redness and oedema of the face which made Kaposi give it the name of erysipelas perstans faciei A generalized rash develops with macules oedematous patches and bullae and is very like the picture of erythema multiforme but here and there the presence of small scaly, plugged atrophic elements suggests lupus erythematosus The skin is only part of a general involvement affecting joints muscles blood and viscera Hyperaemia and oedema of the conjunctiva may lead to shrinking and atrophy or to scarring and blindness A toxic choroiditis is occasionally seen The general treatment is described in the section on lupus erythematosus

CONCLUSION

In considering the whole group of vesico bullous skin diseases it is natural to speculate as to why certain areas should have this special predilection for particular toxins or viruses Why should Hebra s erythema multiforme select the skin of the extremities and sometimes the mouth and eyes or Behcet s syndrome the eyes mouth and genitalia or foot and mouth disease the mouth hands and feet? We do

of course, recognize certain gross differences between one part of the surface and another, such as the variations in pH, which make the feet vulnerable to one kind of fungus and the groins to another, while the antecubital fossa is fungus resistant Of the finer variations in cell life and behaviour, however, we have only a dim knowledge, and can say little more than that the sites of election in these diseases must depend primarily on local biochemical variations in cell life Secondarily as we have seen, extrinsic factors of many kinds seasonal variations thermal changes body rhythms and so on, may increase cellular susceptibility Fortunately, the ocular tissues appear less liable to these effects than is the skin since it is notable that in this disease group the eyes are affected late or not at all

A beam of light has been thrown on the whole question by recent biochemical research A cell we know, is not a fixed static structure It is like a river superficially the same though every particle is in a state of constant flux The cell is continually taking up from the circulation materials which are then altered or broken down under the influence of various enzyme systems In carbohydrate metabolism when the cell is breaking down glycogen or glucose into carbon dioxide and water, each stage of this process is under the control of a different enzyme If any component of this system can be interfered with and inhibited, the metabolism of carbohydrate will be poisoned and the cell will as it were cease to breathe Some years ago Peters (1936a and 1936b) found that one of these enzyme systems the pyruvate oxidase system is very sensitive to arsenic and that the carbohydrate break down process of a cell is poisoned at an important stage by traces of an arsenical During the war Thompson, working in Peters s laboratory investigated the effects of lewisite (an arsenical poison) with a view to finding an antidote (Carleton and her colleagues 1946 Stocken and Thompson 1946) Thompson found that skin contaminated *in vivo* with lewisite showed a profound inhibition of the pyruvate oxidase system and together with Stocken made the discovery that a dithiol (dimercaptopropanol) which for security reasons during World War II was given the name of BAL (British Antilewisite) has a greater affinity for arsenic than the tissue acceptors so that by uniting with the arsenical it can completely prevent its effect, both on the pyruvate oxidase system and on the skin cells as a whole Furthermore if the arsenical has already united with the cell the dithiol if given shortly after can remove it and unite with it to form a stable and harmless compound which is excreted in the urine

Now acute arsenical dermatitis has much in common with the diseases we have been considering On the hands and feet it gives rise to bright red blotches which spread up the limbs It produces an oedema and a redness of the face not unlike acute lupus erythematosus In the form of lewisite it gives rise to large vesicles and a penetrating destruction of the eye It would seem therefore that these researches of Peters and Thompson are of great potential significance in regard to the vesico-bullous dermatoses It is true that these workers were dealing with a poison of known chemical composition which interfered with the life of the cell in a known way, and which could be removed by an antidote again of known chemical composition In the vesico bullous diseases on the other hand we know neither the toxin nor how it produces its destructive effects But studies such as these suggest a vast field of research into cellular metabolism with rich prospects of better comprehension in the dermatological field

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useful Some of the antihistamine preparations (Benadryl, Anthisan and Antistin) act as sedatives and antipruritics, even although the role of histamine production in eczema is not thoroughly understood seem to be of definite benefit in some cases

Local treatment is required in addition however, to protect the skin from interference by the patient or others Innumerable prescriptions are given by various authors for local applications but I tend to use few and simple preparations for the average case In a very acute weeping stage compresses of 0 25 per cent silver nitrate in water applied three times a day, and covered by a waterproof material are useful for a day or two by which time the skin should have settled sufficiently to allow a change to compresses of Linimentum Calaminae (*B P C*) three times a day When the condition reaches the scaling state Unguentum Zinci et Olei Ricini (*B P C*) applied as a spread once daily may be used with the addition later of crude coal tar in a strength of from 1 to 3 per cent Should the patient develop the habit of interfering with the lesions by scratching or merely to watch progress an occlusive dressing may be used and I have found Ichthopaste bandaging the most effective this dressing may be retained for a week or longer

Fractional x ray therapy is very useful in clearing up the residual stages and in preventing recurrence but I do not advise more than a total of 400 r over a period of 4 weeks

In the later stages I find a cream useful and this can be used as a barrier preparation after recovery if no industrial barrier preparation is available For ease in use a wax water emulsion is the most convenient but Lanette Wax SX and such waxes may produce irritation of the skin in themselves so it is probably safer to keep to a more oily preparation I add stearic acid so that a watery solution may be incorporated if desired for example a cream with a base of 30 per cent of yellow soft paraffin 10 per cent of stearic acid 0 5 per cent of triethanolamine and almond or castor oil—or equal parts of the oil and lime water—to 100 per cent

There is a group of papular and dry scaling and fissuring eczematous eruptions of the palms and soles in which a nervous background is generally present These lesions may be associated with endocrine or metabolic changes or with exogenous irritants and are common in both sexes about the menopause (male or female) (*see* Fig 290) The skin is markedly parakeratotic—epidermal cells retaining their nuclei and failing to become normally keratinized—as well as hyperkeratotic leading to scaling and fissuring The borders are ill defined and the condition tends to spread along creases On removal of the scales the skin is reddened and rarely vesicles are visible This condition may be very irritable refractory or recurrent and be accompanied by insomnia it is essentially a neurodermatitis

The differential diagnosis is from symmetrical hyperkeratosis of the palms and soles of congenital type or from similar hyperkeratosis of occupational type (in which the callosity tends to be more pronounced) or from keratodermic fungus infections, palmar syphilides psoriasis of the palms and soles and arsenical keratoses

Treatment may be difficult but keratolytics such as salicylic acid and later tar preparations, help and fractional x ray therapy is useful sedation and general treatment are essential

Pompholyx

Pompholyx is a form of eczema with particular features and location It is an acute or subacute inflammatory eruption of vesicles or bullae of the hands (cheiro-pompholyx) and feet (podopompholyx) often accompanied by excessive sweating and a sensation of burning or itching The vesicles arise in the prickle-cell layer as



FIG 90 —Menopausal neurodermatitis in a middle aged woman

in the case of eczema are deeply situated and are not related to the sweat ducts The eruption tends to occur in spring and summer and often occurs year after year about the same season

The vesicles resemble boiled sago grains in the skin and occur bilaterally and roughly symmetrically sometimes arranged in groups on the palms and soles sides of the digits in the interdigital spaces and rarely on the backs of the digits Coalescence of several vesicles may lead to the formation of bullae but there is no tendency to rupture the lesions instead drying up and desquamating within a fortnight (*see* Fig 291)

In very acute cases the vesicle or bulla contents may become purulent or from scratching secondary pyogenic infection may occur with ascending lymphangitis and constitutional symptoms as a rule the septic condition responds rapidly to

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There is a group of papular and dry scaling and fissuring eczematous eruptions of the palms and soles in which a nervous background is generally present *These* lesions may be associated with endocrine or metabolic changes or with exogenous irritants and are common in both sexes about the menopause (male or female) *(see Fig 290) The skin is markedly parakeratotic—epidermal* cells retaining their nuclei and failing to become normally keratinized—as well as hyperkeratotic leading to scaling and fissuring The borders are ill defined and the condition *tends to* spread along creases On removal of the scales the skin is reddened and rarely vesicles are visible This condition may be very irritable refractory or recurrent and be accompanied by insomnia *it is essentially a neurodermatitis*

The *differential diagnosis* is from symmetrical hyperkeratosis of the palms and soles of congenital type or from similar hyperkeratosis of occupational type *(in which the callosity tends to be more pronounced) or from* keratodermic fungus infections palmar syphilides psoriasis of the palms and soles and arsenical keratoses

Treatment may be difficult *but keratolytics such* as salicylic acid and later tar preparations help and fractional x ray therapy is useful sedation and general treatment are essential

penicillin locally (or parenterally) or moderate dosage of a sulphonamide (*see* Figs 292 and 293)

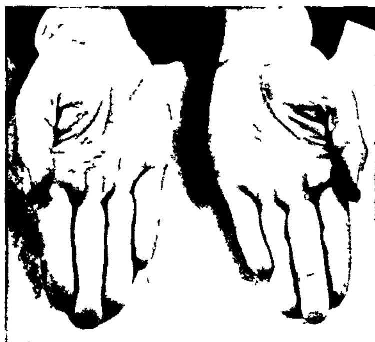
True or idiopathic pompholyx is a neurogenic eczematous condition occurring usually in states of gross anxiety MacKenna (1944) discussed pompholyx in describing the psychosomatic factors in skin diseases Even when a staphylococcus grafted on to the process appears to be the major factor and attacks clear readily with appropriate treatment the psychological factor may still be demonstrably



FIG 292 —Acute staphylococcal infection in cheiro-pompholyx



FIG 293 —Dorsal aspect of fingers of the same patient as in Fig 292



(*a*)



(*b*)

FIG 291—Pompholyx (*a*) of the hands (*b*) of the feet in the same patient

pustules dry up forming punctate brown scabs that are eventually exfoliated Remissions and relapses are characteristic and in time an erythematous and markedly exfoliative patch is produced in which pustules are present being most obvious at the margins the scales are large and firmly adherent at one edge Lesions of psoriasis of the nails and other parts are usually present The histology of the pustular lesions in these cases is that of psoriasis but with more intense infiltration (which shows polymorphonuclear leucocytes in this case) and an exaggeration of the micro abscesses of Munro Sabouraud into definite abscesses Goldsmith (1936) states that it is not generally agreed that these cases are psoriasis while Sachs McKee and Rothstein (1947) state that the psoriatic group is probably a small one

Treatment of psoriasis is dealt with elsewhere The only points to note in treatment of psoriasis of the hands and feet are that some cases require to be treated cautiously as tolerance of local applications may be poor and that pustular psoriasis is usually exceedingly resistant to any form of therapy In psoriasis of the nails I have found repeated paring of the affected portion of the nail and application of thorium X in alcohol (covered by collodion) a helpful if expensive treatment

Pustular bacteride

This condition described by Andrews (1938) is similar in appearance to pustular psoriasis of the extremities but has not the clinical or histological characteristics of psoriasis The disease occurs usually in middle age and focal sepsis can be demonstrated to have a causal relationship

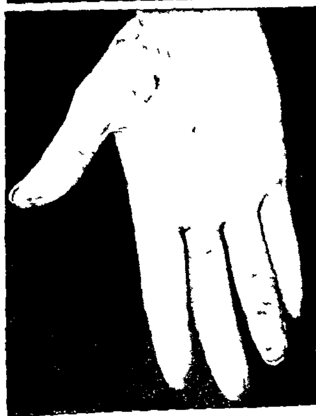
The eruption generally commences in the centre of the palms or soles tending to begin on one extremity but to involve the others progressively the characteristic lesion being pustules although there may be vesicles also Often tiny haemorrhagic points are seen Scaling is the rule the scales being dry tough and adherent Exacerbations with development of fresh crops of pustules or vesicles and accompanied by itching or swelling and pain take place alternating with quiescent phases The characteristic histological feature is the presence of large deep epidermal pustules with little if any surrounding inflammatory reaction

Cultures from the skin are sterile but Andrews (1938) states that positive allergic reactions to streptococci or staphylococci are a feature

Treatment consists in removal of the focus of infection (in teeth tonsils sinuses and so on)

Clinically and histologically identical lesions may also occur in association with infections by fungi for example interdigital ringworm of the feet in these cases as well as in pompholyx of similar origin sensitivity to the toxin of the fungus can be demonstrated Treatment consists essentially in dealing with the original mycotic focus the ide eruption being treated as an expression of allergic response In addition fungus infections may give rise to elevated warty lesions of the soles as part of an allergic reaction leading to the development of a condition resembling the lesions found in two other varieties of keratodermic lesions related to the bacterides namely gonorrhoeal keratodermia and Reiter s disease

(a)



(b)

FIG 295.—Baker's dermatitis (a) patch tests positive to flour and biscuit mixture (b) palmar aspect of hand in the same patient

and emotional sweating affects chiefly the palms and axillae though the feet are often involved as well Acral circulatory disorders such as acro asphyxia (the cold blue hand) or the hot red hand may be accompanied by excessive sweating and the feet may be similarly involved

On the soles the skin may become macerated or blistered and the webs between the toes may show this in a marked degree Along the lateral and medial borders there is a characteristic violaceous erythema in a band stopping about an inch from the sole this is seen most conspicuously in cases in which the footwear is waterproof and the ventilation is rather inadequate as in the Army ammunition boot

Treatment should be aimed at correcting the emotional instability and atropine may help Local treatment may be very helpful as regards the feet sodium hexa metaphosphate as a powder or in a 10 per cent solution is useful but the most satisfactory treatment in my experience is a daily painting of the soles with pure formalin for 3 days followed by the use of a foot powder consisting of boric acid alone or in combination with salicylic acid talcum and starch

Granuloma annulare

This eruption occurring on the extremities—and occasionally elsewhere—is probably related to a number of other chronic annular erythematous lesions thought to be of toxic origin which occur as more widespread eruptions

The cause of granuloma annulare is unknown but it is thought to be a toxic or allergic eruption and it occurs chiefly in children or young adults Darier Civatte and Tzank (1947) favour the theory of a tuberculous origin as do most French authorities but Andrews (1938) voices the more general doubt on this score The histology is the only feature suggestive of a relationship to the tuberculides

The eruption occurs mainly on the dorsum of the hands feet and digits begin ning as a skin coloured or dully erythematous flat topped nodule which extends slowly at the periphery involuting centrally with the formation of annular lesions There is infiltration in the dermis and subcutaneous tissue but the epidermis is unaffected No subjective symptoms are experienced

Treatment is essentially symptomatic Andrews (1938) recommends sodium aurothiosulphate but most authorities agree on the response to fractional doses of x rays Occlusive dressings may be sufficient and I have found calciferol useful in moderately high doses but not in the subtoxic dosage required for tuberculous skin conditions

DISORDERS DUE TO EXTERNAL IRRITANTS

The effects of cold will be mentioned later as the damage produced is essentially to the circulation

Cutaneous disorders can be produced by other physical irritants such as heat and light but as these do not affect predominantly the hands and feet even although the dorsum of the hands may be involved with other exposed areas in dermatoses due to light they are left to be dealt with elsewhere

Keratodermia blenorrhagicum

Keratodermia blenorrhagicum—gonorrhoeal keratosis or keratodermia—is a relatively uncommon skin condition (but not so very rare in my experience as some authorities give the impression) occurring in association with gonococcal arthritis and other metastatic complications of gonorrhoea The eruption consists of reddish, waxy, crusted or rupioid lesions distributed most commonly on the soles but affecting also the hands, glans penis and occasionally other parts The primary vesicle (from which the gonococcus can be isolated at times) is usually microscopic and the first obvious lesion is a pustule or a small dark red maculo papule this gradually develops into the characteristic waxy, cone shaped (or limpet shell) keratosis which is relatively easily separated from the skin, leaving a soft slightly moist, reddish base Treatment is that of gonorrhoea which at present is usually by penicillin or penicillin in conjunction with sulphonamides, possibly with adjuvant treatment by hyperpyrexia for the complications the skin lesions improve as the infection as a whole responds to treatment

Reiter s disease

Reiter s disease is a clinical entity of unknown aetiology characterized by urethritis conjunctivitis and arthritis in which non specific cutaneous eruptions may occur, including (rarely) keratoses identical with those occurring in gonorrhoea apart from the invariable absence of the gonococcus These keratoses are also distributed mainly on the hands feet and penis This syndrome is stated by some to occur in association with bacillary dysentery but there is no real proof of its origin Reiter s disease proves refractory to penicillin sulphonamides salicylates and so on, but does respond in some cases to fever therapy As opposed to gonococcal arthritis no permanent bony or joint changes are left by this disease

Acrodermatitis pustulosa perstans

As already mentioned, Sachs McKee and Rothstein (1947) consider this group the largest of the recalcitrant pustular eruptions of the hands and feet They state that histologically the lesions are not related to psoriasis and that in their cases no significant mycological abnormalities were revealed nor were any foci of infection detected

The disease persists for years with spontaneous remissions and exacerbations The elementary lesion is a pustule, although there may be a transient vesicular phase at the onset of the exacerbation During remissions the skin is excessively dry parchment like and perhaps slightly scaly

The lesions occur over the palms soles and digits with a predilection for the thenar eminences and the centre of the soles and extending towards the inner side of the feet

The eruption is usually resistant to any treatment although spontaneous permanent cure may occur

Hyperidrosis

The extremities are the main regulators of body temperature Stimulation of the sympathetic system, as well as producing vasoconstrictor tone induces sweating

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daffodils tulips chrysanthemums and many other plants Orange peel is another substance which may cause trouble two terpenes in the peel being incriminated it has been shown that those susceptible can drink orange juice with impunity but an

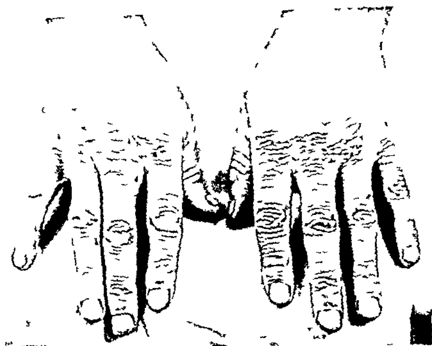


FIG 296 — Mild oil dermatitis showing folliculitis

irritating finely vesicular eruption occurs on the fingers whenever they squeeze an orange

DISORDERS DUE TO INFECTION BY PYOGENIC COCCI

Pyococcal infection of the skin of the hands and feet occurs most commonly as part of a more generalized eruption or as a secondary feature superimposed on some other dermatosis but there are certain lesions which usually commence on and affect predominantly the hands and feet and it is these that will be dealt with here to the exclusion *possibly of some* of the more common diseases

Boils carbuncles and erysipelas are no more frequent on the extremities than elsewhere and show no distinguishing features from similar lesions of other parts but the pyogenic cocci *may invade the nail beds* and give rise to one of the commonest forms of paronychia

Paronychia

Paronychia caused by the pyogenic cocci may be either acute or chronic and may be secondary to traumatization for example by pushing back the cuticle or by constant maceration

Owing to their greater exposure to industrial irritants however, *the hands are* predominantly involved in the majority of cases of occupational diseases of the skin or lesions due *to accidental contact with external* irritants encountered apart from the occupation Accordingly brief mention will be made here of some of the commoner forms of occupational or other externally initiated dermatoses of the hands as already noted (*see* Eczema pompholyx) some of the larger works on the subject should be consulted for the multitudinous factors which may be involved in cases of industrial dermatitis *owing to the complexity of modern* manufacturing processes or to the multiplicity of potential irritants handled in *various occupations*

In the development of occupational dermatitis several factors may come into play in some cases gross chemical or other trauma may produce the reaction whereas in others oft repeated *minor traumas may favour the development of* allergic reaction and in yet others an idiosyncratic allergy may lead to an almost *immediate reaction to one or more irritants*

The dorsal aspects of the hands and fingers are the most frequently or most severely affected parts, but the situation varies with the irritant for example *chrome dyes or rubber may cause dermatitis of the feet from the wearing of boots* and shoes

Gross trauma leads usually to reddening marked blistering and in severe cases ulceration

The most common variety, however, is the eczematous one in which the eruption begins as erythema and oedema of the skin often progressing to vesicle formation and rupture of the vesicles with the development of oozing points there is a tendency for the lesions to coalesce into plaques which become thickened as time goes on and often become secondarily infected In some cases the vesicles are deep seated grouped, tense and of the pompholyx type The eruption usually settles on removal *of the irritant unless the case passes into the condition of contact infective* allergic dermatitis already mentioned (*see* Fig 295)

In other cases such as those lesions produced by lime or cement the epidermis becomes chronically thickened and horny the thickened layers tend to split deeply producing painful disabling fissures and in cases due to lime ulcers may develop *also*

Mineral oils tars chlorine or other halogen compounds and many other substances can produce follicular irritation with the development of erythematous papules or papulo pustules of the hair follicles (*see* Fig 296)

Chrome or bichromates, lime and arsenic produce ulceration and tar tar derivatives and mineral oils *x rays and arsenic may produce cancer*

Maceration tends to favour the development of dermatitis of the sodden denuded type

Substances causing dermatitis in *most people include formalin* those seldom leading to trouble include Novocain

Many plants cause irritation the commonest being the stinging nettle *Severe eczematous eruptions may* occur through contact with *Primula obconica* or *P sinensis* in sensitive subjects Also producing erythemato vesicular eruptions are

daffodils tulips chrysanthemums and many other plants Orange peel is another substance which may cause trouble two terpenes in the peel being incriminated it has been shown that those susceptible can drink orange juice with impunity but an

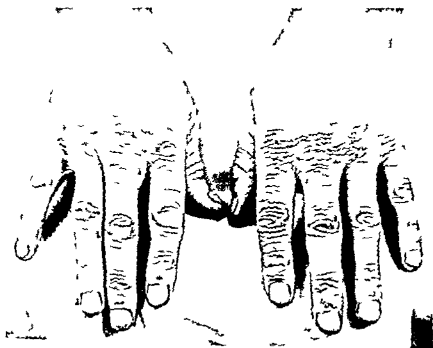


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Paronychia

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In the acute phase there is reddening swelling and tenderness of the nail folds during this phase pus may ooze from under the thickened fold In the chronic phase there is less oedema and tenderness, and a small drop of pus can be expressed only on firm pressure The nail plate gradually becomes deformed but usually simply by ridging or alteration of shape as opposed to the more marked changes found in fungus infections In some cases however pus extends under the base of the nail and the nail plate is ultimately shed

Treatment calls for rest of the part and protection especially from maceration Various continuous wet dressings spirit paints and ammoniated mercury ointment are advised, but I have found either dry heat or penicillin cream (with no sulphonamide but with 2 per cent phenoxetol incorporated) the most useful local applications Even more effective although somewhat painful at the time is the injection of a solution of penicillin at a concentration of 100,000 units per millilitre directly into the infected tissues (Liles, 1947) one or at the most two, injections may bring about complete recovery in my experience Intramuscular penicillin I have found to be slower in action and more extravagant in the amount of penicillin required In chronic cases fractional x ray therapy may be necessary

Granuloma telangiectaticum

This occurs commonly on the hands—although it may occur on any part—as a small pedunculated, raspberry like highly vascular, granulomatous tumour, secondary to infection by the pyogenic cocci The more rapidly growing lesions usually remain moist and covered with a thin sero purulent film and they bleed



Fig 297 —Orf lesions on the hand of a farmer s child

readily, but the more chronic and slowly developing lesions may be dry and covered by a thin layer of epidermis

This lesion is easily destroyed by simple destructive sterilizing methods electrical cauterization is probably the most satisfactory method but even freezing by means of carbon dioxide snow will suffice in the average case

A lesion which is similar but usually larger may be found in a virus infection acquired by contact with sheep infected by orf or contagious pustular dermatitis of

sheep (Peterkin 1937) these lesions are most commonly present on the hands (*see* Fig 297)

Streptococcal acrodermatitis

This is a condition causing vesicular and impetiginous lesions tending to become eroded denuded and exudative The disease is usually bilateral and involves the hands and feet but responds readily to soaks of corrosive mercuric chloride or to a mild antiseptic ointment or to local penicillin applications

Acrodermatitis perstans vel continua (Hallopeau) dermatitis repens (Crocker)

This chronic inflammatory dermatosis of the extremities commences usually on the extremity of a digit at the site of an injury or of paronychia thus being unilateral and localized Vesicles or bullae soon appear at the site of injury rupturing and shedding the elevated epidermis and leaving a red surface from which a clear or slightly turbid fluid oozes Continued exudation or the formation of fresh

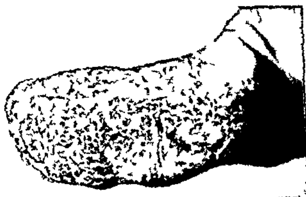


Fig 298 —Acrodermatitis perstans of the thumb

vesicles or bullae just beyond the margin produces extension of the denuded area and later crusted eczematoid lesions may be formed which in my experience invariably show the intra epidermic phlyctenulae emphasized by Barber In quiescent phases a psoriasiform appearance may be present Paronychia is the rule rather than the exception and in the course of time one or more nails may become dystrophic or even destroyed A bulbous appearance of the tip of the digit may develop and there may be signs of periostitis and of rarefaction of the bone of the terminal phalanx (*see* Fig 298)

The parts involved are usually the hands and feet but the disease may affect the mucous membranes or even become widespread or generalized Even in the rare generalized form Barber and Eyre (1927) hold that the disease is due to a strain of *Staph aureus* with particular pathological properties and four cases of the general ized form that I have seen all gave a growth of *Staph aureus* from either the skin or an affected mucous membrane

This disease may be exceedingly refractory to treatment, but penicillin or sulphonamides may bring about a cure In reviewing an instance of unusual sulphonamide tolerance in a case of acrodermatitis continua Sulzberger and Baer (1947) mentioned a very severe case they had treated by sulphapyridine continuously for several years, with complete cure Local treatment is by antiseptic lotions pastes or ointments or topical penicillin

Intertrigo

Pyogenic cocci may help to produce a sodden denuded fissuring condition in the webs between the toes, which is favoured by hyperidrosis or friction Treatment is by maintenance of cleanliness and by the application of a dusting powder of for example, zinc oxide and talc or starch

DISORDERS DUE TO OTHER BACTERIA

Among the many bacterial diseases which may affect the extremities I shall mention only two which may be found entirely confined to the hands they are due to direct inoculation of the organism and are usually associated with minor traumas In addition one ' ide eruption is considered

Erysipeloid (Rosenbach)

This is an erythematous bluish, marginated swelling usually on the hands, caused by *infection from animal matter, such as fish game poultry meat and* especially pork *Bacillus rhusiopathiae suis* or *Erysipelothrix rhusiopathiae* has been *isolated in cases in which the infection was acquired from pork and in fact* Andrews (1938) emphasizes the wide distribution of this organism although allied organisms *are possibly involved in some cases The incubation period is* between 1 and 21 days At the site of infection a purplish erythematous spot appears which becomes a tense irritable swelling there is spread (much slower than in erysipelas) with a well defined margin but no constitutional symptoms or at most very mild ones The infection runs its course in from 1 to 6 weeks in some cases there may be a period of apparent cure followed by reappearance of the eruption in an immediately adjacent area

Treatment by penicillin or even by the sulphonamides is stated to produce a *dramatic cure in fact* penicillin has been shown to be effective in experimental infection in mice (Klauder and Rule, quoted by Sulzberger and Baer 1947) but *in the* cases commonly encountered among fish workers in Aberdeen I have not found that either penicillin or sulphonamides in full doses make any appreciable difference to the rate of involution of the disease Rest and a dressing of *10* per cent of Ichthyol in glycerin appear to be as effective as any other therapy in the Aberdeen cases

Tuberculosis verrucosa cutis

This variety of cutaneous tuberculosis occurs as a result of direct external *inoculation* and in the majority of cases is probably the reaction of a highly resistant individual It occurs most commonly on the hands of adults *who are* handling tuberculous patients or bodies (of man or animals) thus it is found chiefly in the medical world and among butchers and others handling *tuberculous carcases*

The prototype of tuberculosis verrucosa cutis is the anatomical wart a single hyperkeratotic dull red lesion persisting indefinitely with very little growth but Andrews (1938) points out that it may be accompanied by serious developments such as erysipelas generalized tuberculosis or gangrene I recall one case in which a young man suffering from tuberculosis verrucosa cutis which had been present for only a few months died of generalized tuberculosis two months after I saw him

Another type of lesion occurs as single or multiple warty patches of varying sizes from 1 to 7 or 8 centimetres in diameter These patches show elevation gross thickening of the skin as well as the warty top and may have a tendency to deep fissuring of the hyperkeratotic surface The degree of inflammatory hyperaemia is usually slight while the patches may be configurate and show slow central involution to atrophic scarring

Treatment is best carried out by destruction of the lesion by the cautery or alternatively removal of the warty surface by a 40 per cent salicylic acid plaster followed by general and intensive local ultra violet light I have found carbon dioxide snow useful if any warty surface remains it can be macerated by liquor potassae just before the snow is applied At present however any local treatment is best combined with general treatment by subtoxic doses of calciferol (unless contra indicated by cardiovascular or renal disease or for other reasons) as intro duced in this country by Dowling and Prosser Thomas (1945) and subsequently discussed by numerous writers

Papulo necrotic tuberculide (folliclis)

The lesions of this eruption are supposedly due to bacillary emboli from lesions in the viscera the appearance of the cutaneous lesions depending upon the allergic state of the tissues but being essentially small granulomas They appear in crops and may affect the fingers only although other parts (especially the forearms elbows and legs) are commonly involved The individual lesion begins as a tender point where a papule develops on the centre of which a vesicle appears This vesicle dries up into a dark conical plug which separates to leave a white atrophic scar The lesions are scattered and the sites of predilection are the fingers especially the tips and backs the fingers tend to show acrocyanosis Stokes (1935) mentions the distribution as an important distinguishing feature from late syphilides of the hand

Treatment of this eruption is systemic but care in giving general ultra violet light baths is required when there is any doubt about the condition of the chest

DISORDERS DUE TO SPIROCHAETES SYPHILIS

In this group only one disease will be considered but this disease is one of the most important in differential diagnosis of palmar and plantar lesions—namely syphilis I shall confine the description to those lesions which may occur on the palms and soles alone omitting such lesions as bullous or impetiginous congenital syphilides in which the palms and soles may be most markedly affected but other signs and symptoms are obvious In all other cases of doubt of course a complete general physical examination for other signs of syphilis is essential

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may exhibit marked hyperkeratosis, with dense almost translucent horny plaques with a central crater There is a marked tendency to grouped and arcuate figures on the heel the general hyperkeratosis is more marked and the lesions may show only as pits

Nail changes

Nail changes are not particularly distinctive friability and destruction of the nail are usually not accompanied by the degree of thickening and elevation of the free border which is characteristic of ringworm Stokes (1935) stresses the association in syphilis of paronychia (in itself not distinctive) and dactylitis of the terminal phalanx with nail changes

INFECTION BY VEGETABLE PARASITES

A large number of fungi of the group known as the dermatophytes (fungi responsible for superficial infections occurring in the stratum corneum in the substance of th nails and in or on the hairs or in the hair follicles) (Lewis and Hopper 1943) affect the hands and feet, in fact probably by far the most common infection in man is interdigital ringworm of the feet Moreover imperfect fungi—yeast like organisms—may infect the hands and feet

Ringworm of the hands and feet

Dermatophytosis of the feet

Dermatophytosis of the feet (tinea pedis athlete s foot foot rot) is the commonest fungus disease of the skin and is probably acquired by infection of the bare foot at public baths on bath mats and so on The disease is usually caused by the *Epidermophyton inguinale* and the growth of the organism is favoured by a degree of hyperidrosis and by heat

The initial lesion may be the development of patches of white sodden epidermis and of fissuring between and under the toes especially in the fourth interspace owing to the shoes pressing the little toe firmly over the space because of the long establish d fashion of denying this toe adequate space In the fourth space there may also be localized hyperkeratotic masses known as soft corns This condition may give rise to little or no subjective symptomatology unless the fissuring is deep so that it is often neglected for long periods

There may however be acute exacerbations especially if the skin of the toes or soles is invaded An itching vesicle develops progresses to a small bulla and is soon followed by a crop of small vesicles round about When the bulla ruptures a raw denuded surface is exposed This condition is also seen round the nails by extension of invasion from infected nails or may occur on the ball of the foot or centre of the sol from primary infection of the soles from floors bath mats and so on The eruption may spread to involve the whole sole and in acute cases may become bullous and even purulent accompanied by oedema of the whole foot and may be disabl ing there is liability to secondary infection by pyogenic cocci leading in some cases to lymphangitis lymphadenitis and sometimes erysipelas which may be recurrent In less acute cases the vesicles which are about 2 or 3 millimetres in diameter dry up gradually leaving yellowish brown crusts In the acute stages there is a marked

There are certain general points worth remembering when the suspicion of early secondary syphilis arises in examining an eruption of the palms and soles These are that the macular secondary syphilide frequently has a papular phase on the palms and soles and associated mucous patches on the mucous membranes that grouping or annular configuration of lesions should suggest the possibility of syphilis and that a papular eruption of the palms and soles with no lesions on the scalp elbows or knees with no fissuring or patches of dermatitis elsewhere and with no severe constitutional symptoms suggests syphilis As Stokes (1935) emphasizes the colour of the lesion is over estimated as a diagnostic point and even the absence of itching is not invariable, for some psoriasiform syphilides itch slightly

Maculo-papular eruptions

In the early maculo papular eruptions the lesions of the palms and soles are papular, flat dull, usually reddish in colour and definitely infiltrated, although less so than the papular lesions which occur slightly later There may be slight peripheral scaling even at this early stage

Papular syphilides

Papular syphilides in the secondary stage of the disease are varied but the most common is the large papular or lenticular syphilide On the palms and soles the lesions may show merely as rather dusky, yellowish red spots, which on palpation are found to be definitely infiltrated In some cases collarettes of scales are present at the border after desquamation of a thick scale from the surface As the infiltration and redness disappear deeply pigmented spots are often left, which persist for long periods Nail changes are rare at this stage (a distinguishing point from psoriasis) and the lesions show little keratosis except in the syphilide cornée of the later stage, in which arcuate configurations may occur

Papulo squamous syphilides

The papulo squamous syphilides are lesions of similar character but in these the scaling may be the most obvious feature, to the extent of producing psoriasiform lesions In this syphilide scraping off the scale leaves only a moist area with serous oozing or diffuse bleeding but usually bleeding is produced only by scraping much deeper than in psoriasis In my experience psoriasis limited to the palms and soles never takes the discrete papular form and the diagnosis can be clinched by lesions elsewhere

Late syphilides

Late syphilides—either acquired or congenital—of the palms are probably the most troublesome from the diagnostic point of view They are often symmetrical and practically never ulcerate Stokes (1935) stresses the diagnostic importance of the border configuration induration and atrophy

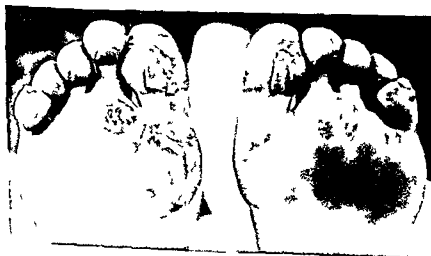
The palmar lesions may show as infiltrated reddened dry and moderately scaly plaques single or few in number round or polycyclic with an indurated cord like border There is seldom fissuring In other cases there may be a process essentially of atrophy of the elastica without destruction of the epidermis leading to a wrinkling and thinning as opposed to the thickening in chronic eczema Still other forms

Vasoconstriction of the subcutaneous arteries and larger arterioles occurs under the influence of cold and is associated with dilatation of the minute skin vessels. In the acute stage there is damage of the walls of these minute vessels of the papillary layer with a perivascular infiltration.

The pathogenesis is concisely reviewed by Gourlay (1948) who believes that the exposure to cold produces vasoconstriction of the subcutaneous arteries and interference with cellular metabolism; if the arterial spasm does not relax quickly



(a)



(b)

FIG. 301.—Lupus erythematosus (a) of the hands (b) of the feet in the same patient. In this case the disease had a fatal termination.

recommendation of daily soaks with 3 per cent solution of *formalin* for 3–4 weeks proves very useful in a fair percentage of cases, but I find it necessary to continue this treatment rather longer if this is unsuccessful the treatment of choice is curettage and cauterization of the base with solid silver nitrate or with the galvano cautery

DISORDERS OF THE CIRCULATION

In the important function of heat regulation the limbs play the predominant part owing to their larger surface area, and striking vasomotor changes occur in response to the needs of the body the fluctuation in the vasomotor state is much more marked in the distal than in the proximal parts of the limbs owing to the blood flow to the hands and feet being in excess of local needs because of the safety valve function of the extremities in the regulation of body temperature The hands and feet are also more markedly under the influence of the sympathetic vasoconstrictor tone The masterly researches of Sir Thomas Lewis and others on the subject of the peripheral circulation have been admirably reviewed by Richards (1946) in a recent monograph throughout this work runs confirmation of the acral onset (in hands and feet, particularly the digits) of signs of circulatory upset under the influence of environment or disease

Vascular changes in general diseases such as arteriosclerosis and diabetes may produce gangrene in the extremities but these are dealt with elsewhere in this section attention will be confined to a certain group of circulatory disorders in the main precipitated by cold

Perniosis

Perniosis is an erythrocyanotic condition of the skin of the extremities due to failure of adaptation of the circulation to cold, followed by damage to the subpapillary capillaries and may be acute—erythema pernio or chilblain—or chronic—acrocyanosis and erythrocyanosis crurum

Chilblains are common in Great Britain and in Europe but rare in Canada and the United States of America central heating in the North American continent may be one factor accounting for the difference

Chilblains occur in cold damp weather particularly and the degree of cold is not the only factor involved They occur chiefly on the dorsum of the fingers on the plantar aspect of the toes along the inner border of the great toe and about the heel, although they may also occur on the calves or shins in young women especially since skirts became shorter and stockings thinner or absent Most authorities state that chilblains are found particularly in children but Winner and Cooper Willis (1946) found that in a series of healthy Service women in the Auxiliary Territorial Service who were mainly under 40 years of age the incidence increased with age, and it was calculated that at least 50 per cent of the women would develop chilblains before the age of 40 years

The first sign is local erythema and a tingling itching sensation on warming the area these symptoms become intensified and later the lesion becomes cyanotic painful and oedematous In severe cases the lesion may ulcerate The skin is usually but not invariably perniotic over the whole of the affected extremity

(ii) arteriosclerosis (iii) syphilitic arteritis (iv) rheumatic arteritis (v) cervical rib (vi) advanced pulmonary tuberculosis leukaemia polychthaemia vera lupus erythematosus malaria chronic arsenical poisoning and so on

The onset of the Raynaud phenomenon occurs usually in adolescence or early adult life and cold is the main factor concerned in precipitating an attack Cooling of the affected digit even while the rest of the body is warm will produce an attack and combined local and general cold will even induce an attack in apparently normal digits Emotion may precipitate an attack but according to Richards (1946) only if other conditions are favourable

The Raynaud phenomenon is an exaggeration of the normal response and Lewis (1936) states that in the majority of cases it is the result of a local fault in the digital arteries themselves rather than of a central vasomotor abnormality After attacks have continued for some time organic lesions in the form of endarteritis and thickening of the media may develop in the digital arteries

Treatment must be based upon the factors involved Protection from cold mild sedation and massage may be of value if there are no underlying disease processes demonstrable In Raynaud s disease I have found dihydroergotamine methane sulphonate (D H E 45 Sandoz) useful in some cases in a dosage as low as 1 milligram per day intravenously but preganglionic sympathectomy although not actually curative is probably the best treatment for Raynaud s disease of any severity

Immersion foot

This term entered current use during World War II to describe a condition of the extremities produced by prolonged exposure to degrees of cold especially moist cold insufficient to produce true frost bite A more accurate name used by Ungley and Blackwood (quoted by Richards 1946) is peripheral vasoneuropathy after chilling The trench foot of World War I and of the winter campaigns of World War II is probably the same condition as the immersion foot of sailors and others who have spent long periods in waterlogged boats or clinging to rafts or Carley floats or even those spending several days in Arctic conditions without being able to remove their boots

During exposure the limbs are numb and powerless and may be tender Occasional cramps are experienced in the legs The feet may be red but later become white or intensely cyanotic After minor injuries blisters or even gangrene may develop

After rescue three stages are described as follows

The pre hyperaemic stage

There is a pre hyperaemic stage in which the feet remain numb and white but the legs may show black blue or greenish patches There is swelling of the extremities and diminution or absence of sensations The dorsalis pedis and posterior tibial pulses are usually absent In this stage as during exposure there is vasoconstriction

enough, an increase of metabolites on warming causes irritation, oedema of the corium and interference with venous drainage, leading *to the production of a* chilblain This hypothesis would explain some of the anomalies found in the development of chilblains

Differential diagnosis is essentially from Bazin s disease (erythema induratum) a tuberculous process affecting young women with perniotic circulation and presenting as symmetrical, indolent deep granulomatous infiltrations on the posterior aspects of the lower halves of the legs, which may caseate and ulcerate giving rise to deep punched out ulcers Lupus erythematosus may also produce erythrocyanotic, slightly infiltrated patches on the same areas of the hands and feet these areas however, are not oedematous, are more sharply defined and do not itch they also show, in time, some degree of hyperkeratosis (*see* Fig 301)

Treatments advocated for chilblains *are legion Vitamin K is recommended by* Wheatly (1947) (using acetomenaphthone in a dose of 20 milligrams twice daily in the average case), and *Gourlay (1948) recommends nicotinic acid (50–100 milli* grams thrice daily immediately after food) while calcium and vitamin D have been *used for many years Massive doses of calciferol have their advocates and indeed* the results are sometimes impressive, but I feel that such treatment is unjustifiably risky *even were it much more certain than it is Warmth of the proximal parts of* the limbs and two thin coverings of the extremities combined with adequate exer cises and *a nutritious diet* are prophylactic measures of value *alternate congestion* and decongestion by light tourniquet and gravity help to exercise the skin circula tion Local inunctions (Iodex, ichthammol ointments and so *forth) are the least* essential part of treatment apart from the dressing of any ulcerated lesion

The Raynaud phenomenon

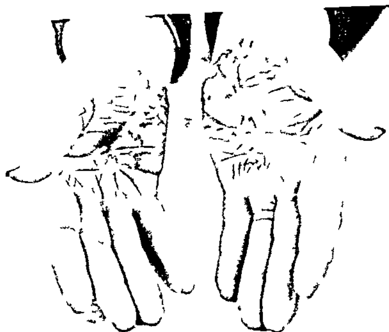
This phenomenon is defined by Lewis and Pickering (1934) as the active and intermittent closure of small arteries of the order of digital arteries supplying the extremities it shows itself clinically by discoloration of the parts affected they become fully cyanotic or waxy white in colour often numb and their temperature falls to that of the surrounding air Hunt s (1936) definition is possibly better for clinical purposes intermittent pallor or cyanosis of the extremities precipitated by exposure to cold without clinical evidence of blockage of the large peripheral vessels and with nutritional lesions if present at all limited to the skin

The Raynaud phenomenon is a relatively common symptom of a number of conditions *Sequeira Ingram and Brain (1947) tabulate these in three main clinical* groups as follows

(a) When Raynaud s phenomenon occurs alone (i) in normal *persons exposed* to cold long enough to lower blood temperature (Richards (1946) specifies severe cold) (ii) hereditary cold fingers (iii) Raynaud s disease (iv) *after local injury* to the hands and feet by vibrating tools

(b) When the Raynaud phenomenon precedes perhaps by several years a condition of permanant coldness and cyanosis of the extremities sclerodactyly (acrosclerosis)

(c) When the Raynaud phenomenon is a temporary phase in the development of gross vascular disease of the extremities (i) thrombo angiitis obliterans



(a)



(b)

FIG. 703—Keratoderma climactericum (a) in the hands of a middle aged woman (b) showing feet of the same patient

and the digits become flexed as well as mummified The nails may be claw like or atrophic The skin of the face becomes taut but not as a rule thickened leading to a loss of expression Telangiectasia may be present

The changes are usually less marked on the feet than on the hands but in both after a certain stage is reached the process may become stationary for decades Sclerosis and atrophy of muscle never supervene (*see* Fig 302) The great majority of patients are adult women, and lesions of the heart and aorta are frequent accompaniments

In the differential diagnosis sclerodactyly (a form of true sclerodermia) is distinguished by the spread of induration down from the arm to the back of the hand and thence to the fingers whereas in acrosclerosis the hard feeling is confined to the two distal phalanges Leprosy is distinguished by signs elsewhere, such as thickenings along the nerves

Treatment by vasodilators and occasionally by sympathectomy has helped but is usually of little avail apart from the local deformities however, prognosis is good

DERMATOSES OF INTERNAL ORIGIN

The hands and feet may be among the areas most markedly affected in many cutaneous disorders occurring in general diseases but in most of these other signs and symptoms point the diagnosis and other areas of the skin are characteristically involved examples of this type include disorders in which exposure to light is a precipitating factor for instance in the skin manifestations of pellagra but here the backs of the hands are involved equally with other exposed areas and general symptoms are present There are some diseases, however, in which the cutaneous disorder essentially affects the hands and feet and it is these only which will be included here

Erythroedema (pink disease infantile acrodynia)

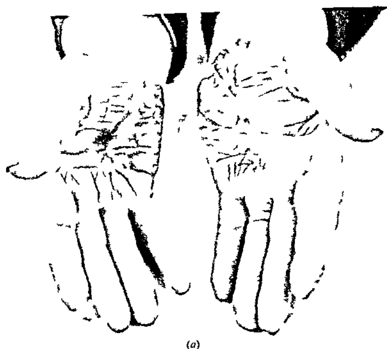
This is a relatively uncommon affection of children in the first three years of life characterized by painful swelling of the hands and feet and sometimes by itching of these parts The hands and feet are cold clammy and red the swelling does not pit on pressure at first Later the skin peels The cheeks and nose are also affected and there is usually a blotchy macular or papular erythema of the trunk

There are associated constitutional symptoms consisting of moderate pyrexia marked irritability photophobia muscular hypotonus tachycardia diminution of tendon reflexes and of pain sensibility and some upper respiratory infection

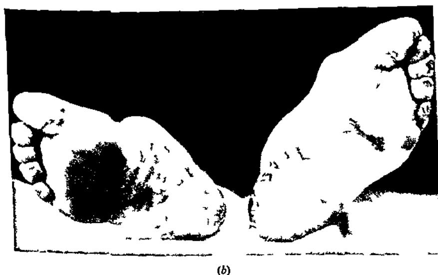
This disease is possibly due to vitamin deficiency and treatment is by careful nursing together with a nutritious diet rich in vitamins Cautious sun bathing (natural or artificial) and liver extract injections are also recommended by some authorities

Symmetrical hyperkeratosis of the palms and soles

In 1934 Haxthausen described ten cases of circumscribed hyperkeratosis occurring in women on the palms and soles and especially on the borders of the heels in



(a)



(b)

FIG 303—Keratoderma climactericum (a) in the hands of a middle aged woman (b) showing feet of the same patient

association with the climacteric and accompanied by obesity, hypertension and arthritis of the knees (Gram s post climacteric triad) The basal metabolic rate was within normal range in all cases The lesions appear in the early stages as discrete sharply defined, round or oval, regular areas of hyperkeratosis varying in size from a lentil to a pea and localized mainly to pressure sites There is little or no elevation from the skin level Later there is a tendency to eczematization, especially on the palms with development of miliary vesicles and deep fissures The histology shows marked parakeratosis resembling that found in psoriasis but no micro abscesses Haxthausen termed this condition keratoderma climactericum , but Barber (1934) stated that he had found the characteristic hyperkeratosis at pressure points preceded by erythema, that the majority of patients complained of a burning sensation in the affected areas and that the palms and soles actually felt hot to the touch Deep fissuring occurred in the hyperkeratotic areas Barber found the sexes equally involved, although the condition occurred most commonly in middle age in people of plethoric habits the blood uric acid values are almost always raised and the disorder is probably a metabolic disturbance primarily (*see* Fig 303)

Treatment

Treatment is difficult in many cases Barber obtained cure in several cases by a low purin diet the administration of alkalis and the avoidance of alcohol whereas Haxthausen found the eczematization more amenable to treatment than the hyperkeratosis Salicylic acid plaster (10–20 per cent) or diachylon ointment may be of benefit temporarily Contact with soaps and water should be avoided for long periods Natural oestrin in dosage of 1–5 milligrams of oestradiol benzoate intramuscularly once or twice weekly in climacteric cases helps but seldom produces a complete cure by itself The dose, of course will have to be reduced if it leads to uterine bleeding

Arsenical keratoses

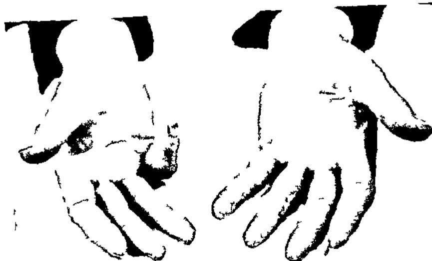
Produced by long continued ingestion of arsenic for example in chronic or recurrent skin diseases such as psoriasis or dermatitis herpetiformis arsenical keratosis is often preceded by bouts of scaling or bullous erythema and affects mainly the hands and feet There are two forms of arsenical keratosis, sometimes arising concurrently

(a) A diffuse yellowish thickening of the palms and soles with marked accentuation of the tops of the papillae

(b) Numerous warty prominences on both aspects of the extremities sometimes also affecting the face and neck these lesions may progress to arsenical cancer Arsenical keratoses persist indefinitely even after cessation of the drug (*see* Fig 304)

Treatment

BAL (2 3 dimercaptopropanol 5 per cent solution) intramuscularly is of benefit in some cases as also is local treatment by salicylic acid plasters In such a case I have used BAL in a dose of 2 millilitres daily for the first day or two the dose may be doubled



(*a*)



(*b*)

FIG. 304 –Arsenical keratosis (*a*) of the hands (*b*) of the feet in the same patient Treatment was by two courses of BAL

Syringomyelia

The skin changes in this rare disease occur principally on the hands affecting particularly the thumbs indices and middle fingers Along with the characteristic dissociated anaesthesia and painless whitlows bullae and trophic ulcerations occur ultimately proceeding to gangrene the muscular atrophy is followed by contractures Necrosis of the terminal phalanges and loss of the terminal segments of the digits may occur

The main differential diagnosis of this disease is nerve leprosy the retention of sensibility to touch being an important feature distinguishing it from leprosy

Treatment

Treatment is unavailing

Perforating ulcer

A chronic localized ulceration usually of the soles of the feet may occur in subjects with debilitating diseases especially diabetes mellitus tabes dorsalis leprosy and peripheral neuritis

Clinically the first change is usually a painful circumscribed hyperkeratosis particularly over the head of the metatarsal bone of the great toe or on the heel This becomes softened moist and painful and ultimately sloughing occurs leaving an indolent ulcer with thickened margins the ulcer itself is usually anaesthetic and may extend deeply, even opening into the joint

More rarely similar lesions occur on the fingers

Treatment

Treatment entails rest of the part as well as treatment of the underlying disease The ulcer may be curetted and treated by antiseptics but surgical intervention may be necessary in severe cases

CONGENITAL ABNORMALITIES

Hyperkeratosis or keratodermia palmaris et plantaris

This is a *congenital thickening of the horny layer of the epidermis* of the palms and soles The condition is usually symmetrical and even the epidermis becoming thick yellowish and horny the surface may be smooth or rough and warty and the fissures are greatly exaggerated The margin is sharp and there is usually no inflammatory zone around it

The affection has been traced through several generations in some recorded cases (*see* Fig 305)

Treatment

Treatment is merely palliative Salicylic acid plasters or ointments may be beneficial Opinions vary as to the desirability of x ray therapy caution is essential and the benefits are only temporary Personally I have found plain *Elastoplast* applied for periods of up to 2 weeks or more of some benefit as a simple protection

Keratodermia punctatum

This is a localized form of keratodermia resembling arsenical keratoses this type is probably a naevoid keratodermia and may occur at any age and in either sex



FIG 305 —Hyperkeratosis palmaris et plantaris shown on the hands of a child aged 9 years

Porokeratosis (Mibelli s disease)

This is a rare hereditary and familial condition which leads to the development of warty hyperkeratotic borders surrounding patches of skin of atrophic or normal appearance The onset usually occurs in childhood and the initial lesion is a small keratotic papule with a horny plug in a central crater like depression The hands and feet are chiefly involved but lesions may appear in neighbouring areas of the limbs or even elsewhere The disease tends to progress irregularly and to persist indefinitely

Treatment

Treatment by filtered x rays is claimed to give good results in some cases while small areas have been treated by electrolysis Sequeira Ingram and Brain (1947) found Grenz rays effective in a dosage of 800 r

Epidermolysis bullosa

Epidermolysis bullosa is a rare disease of the skin characterized by the formation of bullae in response to slight traumatization An inherent defect in the walls of the

blood vessels of the skin may be the underlying cause but in some cases deficiency of elastic fibres in the corium has been found

In the simple type the lesions do not lead to atrophy or scarring and cases are recorded of this type affecting the hands and feet only these latter are familial (Johnson and Test (1946) reported transmission in one family as a simple Mendelian dominant) and lesions develop chiefly in warm weather

The dystrophic type is characterized by a tendency to haemorrhage and to be followed by bluish atrophic scars which show white glistening epidermal cysts of pin head size The nails may be atrophied or completely destroyed

Cockayne (1947) distinguishes from all other types of the disease an entity of recurrent bullous eruption of the feet inherited as a conditional dominant in which the bullae occur every summer between the toes and to a lesser extent on the dorsum of the foot but rarely on the soles and never on the hands or other parts of the body

The simple form of the disease has been known to manifest itself first during adult life, and such cases are designated the acquired type

Treatment

Apart from simple protection of the skin from trauma treatment is of no avail

Angiokeratoma

This rare condition occurs usually in females and is preceded by chilblains The lesions are produced by capillary dilatations leading to the formation of dark red or purplish black vascular growths of pin head size on the dorsum of the fingers and toes these lesions later develop a warty surface The lesions may be single or multiple in the latter case they tend to be closely grouped Other parts of the body particularly the scrotum may be involved and *Goldsmith and Hargreaves* (1948) have shown a case with systematized angiokeratoma

Treatment

The lesions may be treated by the cautery point or by electrolysis

Glomus tumour

This is a *peculiar vascular* encapsulated growth arising mainly from the modified unstriped muscle of the neuro myo arterial organs and occurring chiefly under the nails or on the pulp of the finger or thumb Clinically the lesion is a small bluish elevation, if superficial or invisible if deep *characterized by exquisite sensitivity* and radiating pain The sensitivity is not usually uniform over the tumour but is concentrated in a trigger point

Treatment

Treatment is by surgical *excision*

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CHAPTER 43

DISORDERS OF THE ANO-GENITAL REGION

H J Wallace

The ano genital area may be affected as part of a common and often generalized skin disease or by certain infective and degenerative conditions not usually found elsewhere

An arbitrary division may be made according to the presence or absence of ulceration although many of *the lesions classified as non ulcerative may become* superficially ulcerated when the disease is unusually severe or if there has been much friction or secondary infection In particular it is important to note whether the lesions are *superficial or deep whether they are localized or diffuse* and the presence or absence of infiltration together with the degree of associated irritability

NON ULCERATIVE LESIONS

Dermatitis

The word *dermatitis is here used to describe any superficial inflammation* of the skin

Dermatitis is usually caused by external irritants it tends to be diffuse and is often intensely irritable The affected area is redder than normal and the margins are ill defined Depending upon intensity and duration there may be present weeping oedema scaling or lichenification (Chapter 7) If the skin is frequently exposed to an irritant it may become hypersensitive and further exposures may then cause a reaction differing qualitatively and often quantitatively from that produced before sensitization occurred The term eczema is applied to this hypersensitive reaction

This eczematous change which is thus merely one form of dermatitis may also occur after only a short exposure to an irritant depending upon the individual skin and the nature of that irritant An eczematous dermatitis may be recognized clinically by the presence of vesicles of pin point size representing small areas of oedema in the epidermis (spongiosis) Depending upon the severity of the reaction these vesicles may break through to the surface (weeping eczema) or the process may be more indolent and interference with the normal formation of horn (parakeratosis) leads to a scaly eczema Eczematous dermatitis differs from other forms of dermatitis in that recovery is likely to take much longer and recurrence is much commoner Furthermore when the eczematous change has once occurred the skin may be sensitive to other irritants which previously gave no trouble If chronic irritation and scratching persist the skin may become thickened and the normal lines may be greatly exaggerated This change is known as lichenification and often has a well defined margin It is particularly likely to occur in nervous

patients who may have little if any previous dermatitis and it is then called neurodermatitis Both large and small areas of skin may be affected

Aetiology

Dermatitis in this area results more frequently from exogenous irritants than from endogenous irritants although both sometimes seem to be present together

Exogenous causes —Among the exogenous causes of dermatitis the commonest are given below

(1) Unsuitable local applications the tolerance of the ano-genital skin to potential irritants is often much less than that of any other part of the skin Dermatitis frequently results from the application of tar preparations anaesthetic ointments oestrin preparations fungicides strong antiseptics and particularly nowadays the sulphonamide drugs and penicillin Chemical contraceptives pessaries and douches may also be responsible for dermatitis

(2) Sweat

(3) Glycosuria

Endogenous causes —The endogenous causes include the following

(1) Mental stress

(2) Dermatitis elsewhere From time to time dermatitis anywhere on the body is apt to cause a generalized reaction This is apparently caused by absorption of some toxic agent into the blood stream

(3) Endocrine imbalance has been blamed for much pruritus and dermatitis of the vulva especially about the time of the menopause but the evidence both clinically and therapeutically is that it is less important than has been thought hitherto Except for senile vaginitis the administration of oestrin either locally or generally seldom helps and may be harmful

The ano genital skin may be involved in so-called seborrhoeic dermatitis The term seborrhoeic is a little unfortunate since seborrhoea is not always present in this condition It is a well recognized disorder but if it involves the ano-genital skin it may be so altered by sweating and by friction that the diagnosis may depend upon changes found elsewhere the scalp is often scurfy and scaly dermatitis occurs in a characteristic flexural distribution greasy yellow brown and slightly scaly well-defined patches overlie the sternum and the upper thoracic spine In the uncomplicated state the lesions have fairly clear-cut margins

Treatment

General measures —The first essential is rest when the dermatitis is severe the patient must be in bed Sedatives should be given in dosage sufficient to control the irritation and insomnia Barbiturates are perhaps most helpful for example ½ grain phenobarbitone 3 times a day together with 1 grain at night The dosage should be adjusted to the individual the aim being to obtain adequate rest without causing mental depression If irritation is intense massive dosage of sedatives for a short period may be needed Unfortunately it may prove impossible to secure adequate rest without causing some mental depression and in such patients the antihistamine drugs may be tried for example Benadryl Anthisan or Antistin

These may be given in dosages of 50 milligrams of Benadryl, 100 milligrams of Anthisan or 100 milligrams of Antistin, 3 times a day If the drug is well tolerated, the dosage may be increased, either by administering it more frequently or by increasing the individual dose, depending upon the patient s individual reaction These drugs however, often produce toxic effects, for example malaise nausea drowsiness and fever which may limit their use Toxic effects are perhaps, most frequently seen with Benadryl The depressant effect involves a certain danger of cumulation if the drugs are given simultaneously with barbiturates

Diet is of little importance in this condition, although the patient should of course, avoid any food or drink which appears to cause irritation, certain vaso dilators notably hot strong tea or coffee, and spicy foods or alcohol, are sometimes blamed for this effect

Local applications —The skin of the ano genital region is more easily irritated by local applications than that of any other part of the body, but provided this is remembered the treatment of dermatitis in this area presents only few exceptions to the usual rules of skin therapy The first of these exceptions is that the use of oily or greasy preparations may cause a local sweat reaction particularly when used for long periods or without adequate sponging Since soap is apt to irritate the inflamed skin olive oil arachis oil or liquid paraffin is used as a cleanser but regular sponging preferably with an isotonic saline solution or a 1 per cent sodium sulphate solution may also be required

In the acute phase the lotion should be at the bedside for the patient to use as required This is a valuable substitute for scratching Each preparation should be given a day or two to prove its value unless it adds to the irritation Swift relief of acute dermatitis is not always easy to achieve A lead lotion with or without 60 minims of glycerin or 10 grains of phenol to the ounce of the lotion may be tried If these preparations prove ineffective ½ per cent aqueous silver nitrate solution or one of the following prescriptions often helps

Phenol – – – –	10 gr
Liq Plumb Subacet Dil – –	60 min
Lot Calamin – – –	– ad 1 oz

Liq Pic Carbon – – –	3 min
Sod Bicarb – – – –	6 gr
Aq – – – –	ad 1 oz

After use for a few days these preparations may cause intense drying of the skin and slightly more greasy preparations should be tried either instead of or alternately with, one of the above lotions for example an oily calamine lotion Zinc Cream (*B P C*) or a Lanette Wax zinc–cream such as the following

Lanette Wax SX – – – –	1
Ung Zinc Oxid (*B P*) – – –	2
Aq – – – – –	3

In a subacute or chronic phase the irritation becomes less but the skin may remain very sensitive to irritants The application of stimulating lotions should

therefore be delayed for at least a fortnight after the onset of an acute dermatitis when a mild tar preparation such as the following may help

Liq Pic Carbon - - -	10 min
Lot Calamin Oleos - -	ad 1 oz.

If this is well tolerated but not altogether effective a stronger preparation should be tried such as

Pix Carbon. - - - -	15 gr
Past Zinc - - -	ad 1 oz

With any tar preparations folliculitis may be a troublesome complication and this may necessitate discontinuing their use Although both phenol and tar are antipruritics they may sometimes be inadequate to control intense irritation It is seldom if ever wise however to use stronger antipruritics such as benzocaine owing to the risk of causing an aggravation of the dermatitis Neither phenol nor tar is devoid of this risk particularly in the acute phase

X ray therapy.—Fractional doses of x rays often help both in the subacute and chronic phases If used during the subacute phase very small doses such as 30 r or 40 r only should be used at 7 day or 10-day intervals and 3 or 4 applications should suffice For chronic dermatitis a preliminary dose of 70 r may be given followed by 3 further applications of 100 r at approximately 10-day intervals the exact dosage and interval depending upon the degree of reaction This form of treatment however is probably best withheld in the absence of any special experience

Antiseptics —For any associated sepsis bland antiseptics may be added to the appropriate local applications It has already been noted that many antiseptics are powerful irritants of the skin and should be avoided Argyrol ¼ per cent gentian violet ½ per cent or Hydrargyrum Ammoniatum (*B P*) 2 per cent are helpful although the last mentioned is occasionally not well tolerated If there is much purulent discharge the skin may be bathed with 1 4 000 Hydrargyri Perchloridum (*B P*) in normal saline solution

Fungus Infection

Fungus infection may be recognized as a circular area of redness sometimes clearing in the centre with a spreading scaly or vesicular margin and it is often associated with much irritation The intensity of the redness may vary greatly Confirmation of the diagnosis is obtainable only by the finding of fungus in a scraping from the spreading margin A negative result does not exclude a fungus as the cause especially if fungicides have been applied recently A further scraping should be examined after a few days

Clinical differentiation from dermatitis may be impossible if the picture has been obscured by a secondary dermatitis caused by sweat and friction or more commonly by the application of strong fungicides Dermatitis following fungicides is often misdiagnosed as a persistent infection and the treatment is repeated leading to aggravation of the symptoms A seborrhoeic or intertriginous dermatitis in this area is frequently misdiagnosed as fungus infection and is made worse by the application of fungicides Flexural psoriasis may also simulate a fungus infection

These may be given in dosages of 50 milligrams of Benadryl 100 milligrams of Anthisan or 100 milligrams of Antistin, 3 times a day If the drug is well tolerated, the dosage may be increased, either by administering it more frequently, or by increasing the individual dose depending upon the patient s individual reaction These drugs however, *often produce toxic effects, for example malaise nausea* drowsiness and fever, which may limit their use Toxic effects are perhaps most frequently seen with Benadryl The depressant effect involves a certain danger of cumulation if the drugs are given simultaneously with barbiturates

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Ung Zinc Oxid (*B P*) - - -	2
Aq - - - - -	3

In a subacute or chronic phase the irritation becomes less but *the skin may* remain very sensitive to irritants The application of stimulating lotions should

Although tincture of iodine has long been used for fungus infection on the skin of any part of the body it should not be used on the ano genital skin owing to the risk of a severe secondary dermatitis

Phenylmercuric acetate in a jelly base is used with success although dermatitis is a common complication It is doubtful whether the newly introduced fatty acid fungicides such as undecylenic and propionic acid possess any advantage over the more traditional methods

The aniline dyes gentian violet brilliant green and carbol fuchsin in concentrations of ½–2 per cent are potent fungicides and have the added advantage of seldom irritating the skin though they are very messy In the presence of dermatitis associated with or following a fungus infection when eradication of the underlying infection is uncertain they are particularly valuable and may be prescribed in a bland lotion for example ½ per cent gentian violet in calamine lotion

Old underclothes should be used during treatment They should be changed and boiled daily Other underclothing and particularly infected articles such as towels should be disinfected preferably by boiling

Clinical recognition of cure of a fungus infection may be very difficult and microscopy should always be used when possible If the latter is not feasible it is a good general rule to use one of the blander fungicides for about 2 weeks and thereafter to examine at weekly intervals for the next 2 or 3 weeks

Psoriasis

Psoriasis in any flexure such as the groins and perianal region may be recognized as a dull red area with a sharp outline and associated with some degree of irritation The typical silvery scales found elsewhere on the body in psoriasis are absent in the flexures owing to friction In the clefts the skin may be macerated The diagnosis may be confirmed by evidence of psoriasis elsewhere It may be necessary to examine a scraping of the skin since a fungus infection may closely simulate psoriasis Treatment is often very unsatisfactory Chrysarobin may irritate psoriasis in this area and a milder preparation such as the following may have to be used

Hydrarg Ammon - - - -	10 gr
Liq Pic Carbon - - -	15 min
Past Zinc - -	ad 1 oz

If chrysarobin or anthrarobin is used weak preparations should be tried in the first instance for example chrysarobin 2 per cent or anthrarobin ½ per cent in a bland base such as zinc paste

If local applications do not help small fractional dosage of x rays may be tried or thorium X may be applied every 3 weeks

Intertrigo

Intertrigo secondary to sweat and friction and usually associated with obesity, occurs in the clefts and has an indefinite outline Symptomatic relief may be obtained by the use of a watery paste such as the following

Zinc Oxid - - - -	24 0
Kaolin - - - - -	30·0
Glycer - - - - -	30 0
Aq - - - - -	15 0

Aetiology

The fungus which most commonly attacks the ano genital skin is the epidermophyton It infects the glabrous skin only, the hairs remaining untouched Much less commonly, other fungi such as monilia are involved (*see* below)

Epidermophyton infection in this region, often referred to as tinea cruris or *dhobie itch usually begins in the* upper part of the inside of the thigh after an incubation period of 3–4 days Spread may occur fairly rapidly to the other side to the scrotum, perineum and perianal area Clothing lavatory seats and perhaps most commonly, towels, are the commonest sources of infection Towels are particularly *likely* to aid spread from a fungus infection between the toes Tinea cruris tends to be endemic wherever the fungus foot infection is endemic for example in institutions where spread may occur rapidly by way of bath mats and towels

Infrequently a more intense reaction may be seen produced by a trichophyton infection, which may also attack hair follicles and may spread from a foot infection The incidence of this infection in both feet and groins in Great Britain is much less than from the epidermophyton

The only other fungus infections mainly moniliasis and erythrasma are also fairly rare Both may closely simulate epidermophyton infection and microscopy may be required to make a definite diagnosis In monilial infection the flexures are often heavily infected with subsequent maceration and fissuring Erythrasma may usually be diagnosed by its chronicity and reddish brown colour

Treatment

The least irritant fungicide consistent with effectiveness should be used Unguentum Acidi Benzoici Compositum (*B P C*) (Whitfield s ointment) is probably as good as any If however, a greasy ointment is not well tolerated the benzoic and salicylic acid which it contains may be prescribed in one of the new water soluble bases, for example equal parts of unguentum emulsificans and water or as a spirit lotion such as the following

Acid Salicyl	–	–	–	–	*30 gr*
Acid Benz	–	–	–	–	30 gr
Sp Vin Indust	–	–	–		*ad 1 oz*

Chrysarobin 2 per cent *in an ointment* base or its derivative anthrarobin (Cignolin Derobin) ½–2 per cent in zinc paste may be used if the infection survives weaker *applications or if very rapid eradication* of the infection is required A concentration of ½ per cent of anthrarobin should not be exceeded initially Neither *chrysarobin nor* its derivatives should be used for more than a week they should be discontinued promptly if there is any serious untoward reaction Some degree *of inflammatory* reaction is to be expected but if it is severe, bland preparations such as calamine lotion may be used for a few days before a further application *of either chrysarobin* or anthrarobin or, if necessary, a blander fungicide should be used Although chrysarobin and anthrarobin applications are among the quickest methods of eradicating fungus infection they have the disadvantage of staining clothes indelibly

As a result of hardening and retraction gross atrophy and narrowing of the vaginal introitus may occur In the early stages diagnosis may be impossible both clinically and histologically Histological findings may be very misleading unless great care is used in choosing the correct area for biopsy Furthermore serial section may be necessary to show the characteristic changes Frequently retraction without whitening precedes any real evidence of leucoplakia Whether this is an independent process on which leucoplakia is particularly likely to become engrafted or whether it represents just an early stage of the leucoplakic process is as yet undetermined It is certain however that any such atrophy of the clitoris and labia minora even in the absence of leucoplakia should be observed at regular intervals especially if pruritus is present since leucoplakia is a very common if not invariable sequel The diagnosis of leucoplakia in the well established phase may present no difficulty Characteristically the affected areas are bluish white the surface being dry and often showing quadrilation Both lichenification due to scratching and intertrigo may complicate and simulate leucoplakia and unfortunately the term leucoplakia is often used loosely to denote any whitening of the skin such as may occur in these disorders lichen sclerosus and even depigmentation The commonest symptom is pruritus which may be very distressing and intractable Soreness dyspareunia and dysuria are often present

Aetiology

Leucoplakia usually begins at or after the menopause but occasionally much earlier especially when there is evidence of glandular insufficiency The relationship of leucoplakia to such factors as marital status parity and vaginal discharge have not been adequately studied since most if not all of the series published hitherto have confused two or three disorders From a study of carcinoma of the vulva however which is almost always associated with leucoplakia married women rather than unmarried women seem to be more likely to develop leucoplakia Vaginal discharge does not appear to be an important factor Syphilis is seldom if ever responsible

Histology

In leucoplakia the epidermis is hyperkeratotic sometimes with a few patches of parakeratosis The rete pegs are prolonged may be irregular in size and shape and the epidermis overlying the papillae may also be thickened Immediately beneath the epidermis there is a marked inflammatory infiltration by lymphocytes and plasma cells and the elastic tissue disappears from this region Later the epithelial hyperplasia may increase and become malignant The histology of the condition resembles in many ways that of the pre malignant keratoses which occur elsewhere on the body

Leucoplakia has to be diagnosed histologically from any chronic lichenified dermatitis affecting this region In the latter condition the horny layer though it may be plentiful is mostly parakeratotic the epidermis contains areas of marked spongiosis the epidermal hyperplasia is entirely confined to the rete pegs and these are much more regular in size and shape The inflammatory infiltrate invades the

or proprietary preparations such as Siccolam ointment, to which small concentrations of bland antiseptics such as Argyrol ½ per cent, Hydrargyrum Ammoniatum (B P) ½ per cent or gentian violet ½ per cent may be added if indicated Regular sponging with water and the use of a bland dusting powder is advisable

Lichen planus

Lichen planus may occur on the skin or on the mucous membrane in the ano genital area either alone or in association with lichen planus elsewhere it shows flat topped polygonal papules with a shiny surface which may reveal central umbilication and white streaks, the so called Wickham s striae On the mucosa the characteristic appearances are of milk white patches sometimes arranged in a network Treatment is as for lichen planus elsewhere and is equally unsatisfactory

Leucoplakia and kraurosis

The vulva and frequently the glans and foreskin of the penis are subject to degenerative processes the exact classification and aetiology of which are still in doubt A deplorable lack of co operation between gynaecologists and dermatologists in the past has produced no classification commanding general support partly owing to confusion in nomenclature, especially in the use of the terms leucoplakia and kraurosis

The vulva and perianal area seem to be subject to three distinct disorders which are often confused particularly by gynaecologists These disorders are (1) leucoplakia (2) an atrophic form of scleroderma sometimes known as lichen sclerosus (3) senile genital atrophy Chronic radiodermatitis may simulate all of these disorders

The main reasons for this confusion are twofold First most gynaecologists do not seem to be aware of the existence of lichen sclerosus Secondly narrowing of the vaginal orifice may occur in all three conditions and the term kraurosis originally used to describe this narrowing is often employed to denote any or all of these disorders This is peculiarly unfortunate since even the word kraurosis does not mean narrowing but dryness or brittleness Much further work needs to be done before a satisfactory classification of these vulval disorders is forthcoming

Signs and symptoms of leucoplakia

Leucoplakia of the vulva does not differ in its essentials from leucoplakia elsewhere, for example in the mouth, and is very liable to malignant change It occurs most frequently on the labia minora and on the clitoris Less commonly the perianal area is affected although intertrigo in this area either by itself or in association with leucoplakia of the vulva is often misdiagnosed as leucoplakia The vaginal mucosa and outer surfaces of the labia majora are never affected True leucoplakia of the vulva may be either localized or diffuse Some writers seek to recognize different stages of this process (1) Oedema and redness (2) Whitening with hardness and retraction Characteristic plaques of leucoplakia are seen some hypertrophic and some atrophic (3) Fissuring and ulceration at which stage malignant change is particularly likely to occur All three stages may be seen in the same patient

Treatment

Since the risk of malignancy is so great excision of the affected area should always be done if practicable Some writers have claimed good results with massive dosage of vitamin A and hydrochloric acid The writer has been unable to confirm this and it is probable that many of these claims have again been based on mis diagnoses If excision is contra indicated by the patient s general health the long pudendal nerves may be cut sometimes with marked symptomatic relief This operation however although causing less shock to the patient may present tech nical difficulties In particular x rays and oestrin should not be given It is possible that the former may hasten malignant degeneration Oestrin is not of value and sometimes seems to be harmful

Lichen sclerosus

Lichen sclerosus is the name given to a degenerative disorder the cause of which is obscure but which is almost certainly one type of scleroderma often known as morphoea The writer has one patient under his care at present showing patchy indurated scleroderma on the arms with this atrophic form on the breasts and vulva There is no evidence that it bears any relation to an atrophic form of lichen planus which has been claimed neither is there any evidence that this disorder predisposes to malignancy It is much more common than has been recognized hitherto often masquerading under the misdiagnosis of leucoplakia The writer has seen 6 patients with lichen sclerosus of the vulva in whom vulvectomy had been performed owing to misdiagnosis

Signs and symptoms

Lichen sclerosus frequently occurs in the ano genital skin and this may be the only part of the skin involved particularly the perianal area It may also occur on th trunk and limbs Macroscopically the characteristic lesion is an atrophic lichenoid papule almost pure white in colour often with follicular hyperkeratosis and plugging The appearance of the thin atrophic epidermis with a tendency to crinkling has been likened to cigarette paper The papules often fuse to form large patches of degenerate skin which in this area may become macerated Telangiec tasia and small capillary haemorrhages may also occur The writer has on several occasions seen gross atrophy of the clitoris and the labia minora together with gross narrowing of the vaginal introitus in association with this disorder at an age when senile atrophy could be excluded

Lichen sclerosus in the ano genital area may be symptomless as in other parts of the body Frequently however, pruritus dyspareunia and dysuria are marked

Histology

The histology of lichen sclerosus differs from that of leucoplakia and licheni fication The epidermis is hyperkeratotic and areas of parakeratosis are uncom mon The remainder of the epidermis is thinned and the rete pegs are flattened or absent altogether In early lesions there is a band of inflammatory cells mostly lymphocytes lying immediately beneath the epidermis Later this inflammatory band retreats downwards from the epidermis leaving the upper third of the dermis almost devoid of cells In the clear zone the collagen has a smeary mucoid and

epidermis to a greater extent and is composed almost entirely of lymphocytes (Figs 306–308)

Diagnosis

This may usually be made on the hard dry, blue white, *often quadrilated*, patches especially involving the clitoris and labia minora Since, however, leucoplakia is often misdiagnosed, the histology should be studied if there is any doubt

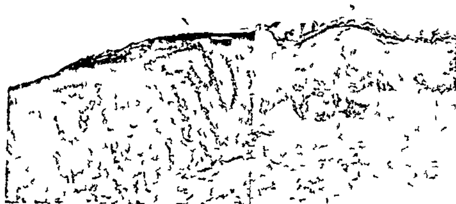


Fig 306 —Chronic lichenified dermatitis *Section from perineum showing* parakeratosis oedema and regular prolongation of the rete pegs Stained by the haematoxylin eosin method

Fig 307 —Leucoplakia Section from the vulva of a woman aged 56 years showing moderate hyperkeratosis and irregular acanthosis Stained by the haematoxylin eosin method



Fig 308 —Section from an area adjacent to that in Fig *307 showing a squamous carcinoma* Stained by the haematoxylin eosin method

Lichenification and intertrigo which are often associated in the ano genital area may cause difficulty in diagnosis A large area of the vulva and the perianal area may be involved but the whitened patches have a sodden appearance and *lack the* hardness of leucoplakia As previously noted however *lichenification and* leucoplakia may coexist Histological examination *if necessary, may be required from* different areas *The differential diagnosis of leucoplakia from* lichen sclerosus, *from senile genital atrophy and from chronic* radiodermatitis is discussed later

Treatment

Since the risk of malignancy is so great excision of the affected area should always be done if practicable Some writers have claimed good results with massive dosage of vitamin A and hydrochloric acid The writer has been unable to confirm this and it is probable that many of these claims have again been based on mis diagnoses If excision is contra indicated by the patient s general health the long pudendal n rves may be cut sometimes with marked symptomatic relief This operation, however although causing less shock to the patient may present tech nical difficulties In particular x rays and oestrin should not be given It is possible that the former may hasten malignant degeneration Oestrin is not of value and sometimes seems to be harmful

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grossly oedematous appearance and elastic tissue is very much reduced or more commonly absent altogether In sections, the epidermis is often seen to have separated from this abnormal dermal connective tissue, and though this appearance is almost certainly largely an artefact it occurs so regularly as to suggest some actual looseness of attachment of the epidermis to the dermis Later still in the course of the disease the inflammatory reaction may largely disappear the oedema



FIG 309—Lichen sclerosus Section from the vulva of a woman aged 68 years showing flattening and hyperkeratosis of the epidermis and the oedematous mucoid appearance of the upper zone of the dermis *Stained by the haematoxylin eosin method*

subside and the collagen lose its mucoid appearance and become a dense matted mass of fine fibres The epidermis remains thinned, flattened and hyperkeratotic (Fig 309)

Diagnosis

This is sometimes difficult Lichen sclerosus has to be differentiated from leucoplakia and intertrigo The dead white atrophy of the skin, often with follicular plugging telangiectasia and capillary haemorrhage does not occur in leucoplakia or intertrigo Often characteristic lichenoid papules may be seen at the margin of the affected area Examination of the remainder of the skin may show typical lesions elsewhere on the body particularly on the breasts, shoulders and wrists When the diagnosis however is in doubt, a histological examination will usually enable the correct diagnosis to be made although occasionally further observation at regular intervals will be necessary

Treatment

Treatment of this disorder is symptomatic only Some writers have claimed good results from the use of vitamin E and oestrin but these claims lack confirmation

Senile genital atrophy

Some involution of the female genitalia is normal in old age Uncommonly gross narrowing of the vaginal introitus occurs often associated with severe vaginitis This change is sometimes seen at an early age after a premature menopause For this type of atrophy with narrowing of the vaginal introitus the term kraurosis may be used, although in Breisky s original description it was used for

the atrophy associated with leucoplakia It is still used in this sense in America and on the European Continent It would probably be better to discard the term kraurosis altogether since it has caused so much confusion and narrowing of the vaginal introitus to which it was originally applied is common to at least three disorders in this area Etymologically the term is deplorable since the word means brittleness or dryness rather than narrowing Histologically the changes are those of senile atrophy of the skin namely thinning of all layers but no gross loss of elastic tissue The symptoms are soreness and dyspareunia Pruritus is rare and malignant change does not occur Oestrin often gives relief

In the author s experience the diagnosis of this senile form of genital atrophy with a benign prognosis is often incorrectly made Many such diagnoses on further examination prove to be either leucoplakia associated with retraction or lichen sclerosus Whenever gross atrophy of the labia minora is present especially with pruritus the diagnosis of this innocent form of atrophy should be suspect

The presence of vaginitis in association with atrophy is not adequate reason for making this diagnosis since in both leucoplakia and lichen sclerosus although the process does not extend to the vaginal wall vaginitis is an occasional complication

Chronic radiodermatitis

This may give a picture of atrophy sclerosis and telangiectasia indistinguishable from senile genital atrophy although the sharply marginate distribution the marked degree of atrophy and telangiectasia in radiodermatitis usually serve to differentiate the two A careful history will usually help to confirm the diagnosis Treatment is symptomatic only unless there is evidence of malignant degeneration for which surgery is indicated

Drug reactions

Reactions to drugs (for example to phenolphthalein) may cause annular or circular erythema in this area or elsewhere These erythematous areas may occasionally become bullous and superficially ulcerated and are often associated with some degree of irritation

Lupus vulgaris

Lupus vulgaris rarely occurs in the ano genital skin but it may occur on the buttocks It may follow scrofuloderma from an underlying tuberculous focus scrofuloderma is the commonest form of tuberculous infection of the skin in this area (*see* Chapter 19)

Condyloma

Condylomas or warty masses in this area are of two main kinds syphilitic and non syphilitic Unhappily the more common non syphilitic condyloma the so call d acuminate condyloma is often referred to erroneously as a venereal wart It is in fact nothing more than the form an ordinary wart takes in this area probably owing to heat sweat and friction and it may be recognized by its luxuriant and papilliform growth unlike the small dome shaped syphilitic condyloma the so-called condyloma latum If acuminate condylomas are seen in the early stages they may be treated by the local application of podophyllin This is best applied as

grossly oedematous appearance and elastic tissue is very much reduced or more commonly absent altogether In sections the epidermis is often seen to have separated from this abnormal dermal connective tissue, and though this appearance is almost certainly largely an artefact, it occurs so regularly as to suggest some actual looseness of attachment of the epidermis to the dermis Later still in the course of the disease the inflammatory reaction may largely disappear the oedema



FIG 309—Lichen sclerosus Section from the vulva of a woman aged 68 years showing flattening and hyper keratosis of the epidermis and the oedematous mucoid appearance of the upper zone of the dermis Stained by the haematoxylin eosin method

subside and the collagen lose its mucoid appearance and become a dense matted mass of fine fibres The epidermis remains thinned flattened and hyperkeratotic (Fig 309)

Diagnosis

This is sometimes difficult Lichen sclerosus has to be differentiated from leucoplakia and intertrigo The dead white atrophy of the skin often with follicular plugging telangiectasia and capillary haemorrhage does not occur in leucoplakia or intertrigo Often characteristic lichenoid papules may be seen at the margin of the affected area Examination of the remainder of the skin may show typical lesions elsewhere on the body particularly on the breasts shoulders and wrists When the diagnosis however, is in doubt a histological examination will usually enable the correct diagnosis to be made although occasionally further observation at regular intervals will be necessary

Treatment

Treatment of this disorder is symptomatic only Some writers have claimed good results from the use of vitamin E and oestrin but these claims lack confirmation

Senile genital atrophy

Some involution of the female genitalia is normal in old age Uncommonly gross narrowing of the vaginal introitus occurs often associated with severe vaginitis This change is sometimes seen at an early age after a premature menopause For this type of atrophy with narrowing of the vaginal introitus the term kraurosis may be used although in Breisky s original description it was used for

finding of an acarus either in the burrows in the area or elsewhere on the body

Pruritus ani

Pruritus ani and pruritus vulvae occur frequently and may cause difficulty both in diagnosis and treatment Pruritus vulvae will be discussed later

Pruritus ani may result from a skin disorder such as *intertriginous* dermatitis associated with excessive sweating Frequently and particularly in middle aged men an intractable form of pruritus occurs with no observable skin changes If in these patients irritation and scratching persist the skin may later become lichenified often with superficial maceration

For the practitioner therefore it is best to consider history and examination in the usual way although with experience examination may often render much of the history redundant

History

In this history particular note should be taken of any relation of the pruritus to constipation aperients or piles Pruritus due to infestation with threadworms is said usually to begin about 2 a m In Great Britain however worm infestation seldom seems to cause pruritus ani except in children Sometimes the pruritus is related by the patient to a period of mental stress Very frequently however especially in pruritus without observable skin change *no relevant history can be obtained*

Examination

Examination should suffice to exclude general or local skin disorders Sweatiness and *intertrigo* are perhaps the disorders most frequently found in association with pruritus ani The rectum and anus should be examined for abnormalities such as piles proctitis and neoplasm although even when such abnormalities are present they may bear no relation to the pruritus In particular the removal of perianal tags seldom seems to help Pruritus ani may however be the first sign of a carcinoma of the rectum Vaginal discharge sometimes seems to be responsible for pruritus ani although usually following or in association with pruritus vulvae When skin changes are minimal or absent parasites may be responsible Rarely in pruritus ani general constitutional causes such as diabetes mellitus and jaundice are causative When the history is suggestive of a threadworm infestation the stools should be examined and since the worms are most active in the middle of the night the specimen of faeces should preferably be obtained by a hypertonic saline enema given at 3 a m

Treatment

If a cause can be found and treated the prognosis is good Intertriginous dermatitis caused by sweat and friction usually in an obese subject is often incurable If a local skin disorder is present the appropriate treatment should be given

The cause of pruritus ani with no primary skin change is loosely assumed to be psychogenic There is little doubt that this is often true but proof is not yet forthcoming that this accounts for all such pruritus It is often difficult to determine whether the mental state precedes or follows the pruritus

a 25 per cent solution in industrial spirit rather than in liquid paraffin which is often used The podophyllin should be applied accurately to *the condylomatous* area twice a day for 5 days, the surrounding skin being protected with Vaseline since on normal skin podophyllin is apt to cause *an irritant dermatitis Dermatitis* is particularly likely to occur with the paraffin solution in which accurate application of the podophyllin is more difficult These condylomas may grow rapidly, forming masses of warty tissue for which the only satisfactory treatment is destruction by curettage and cautery or diathermy, either under local or general anaesthesia

Molluscum contagiosum

The virus infection molluscum contagiosum, may be recognized by the pearly, *circular raised umbilicated lesions* varying in size up to a quarter of an inch in diameter Infection may occur by way of towels with an incubation period of perhaps, several months On squeezing a molluscum body, a cheesy like substance may be extruded in which the typical molluscum cells may be seen on microscopic examination even in unstained preparations treated with potassium hydroxide *The lesions may be removed fairly easily by scraping and painting the base with* tincture of iodine The patient should be warned about possible seedlings Other treatments have been described which are unnecessarily elaborate

Secondary syphilis

Secondary syphilis may be present as moist papules condylomas condylomata lata or mucous plaques which are often serpiginous in outline and have a flat *white colour Ulceration is uncommon in the secondary stage of syphilis*

Vitiligo

Vitiligo occurs fairyl frequently on the ano genital skin The depigmented area may be surrounded by a zone of hyperpigmentation Clinically, the skin *is other*wise normal and symptomless but hairs may be affected Reassurance is the only treatment required any other is valueless

Conditions caused by parasites

Pediculosis pubis

This condition is now rare in civilian practice but must always be considered in the diagnosis of dermatitis and pruritus in the pubic and perianal area *especially* when excoriation is present The time honoured treatment with a strong mercurial ointment is very apt to cause dermatitis Unguentum Hydrargyri Ammoniati *(B P) should be used in preference to* Unguentum Hydrargyri (*B P*) If the former causes irritation, it should be discontinued temporarily and later Unguentum Hydrargyri Ammoniati Dilutum (*B P C*) *may be tried, after treating any secon*dary dermatitis with a bland antiseptic preparation such as Lotio Calaminae (*B P C*) with 1 8000 Hydrargyri Perchloridum (*B P C*) *Alternative treatments* include Lethane and D D T emulsion Treatment is facilitated by shaving the area but this is not essential if local treatment is adequately carried out

Scabies

Scabies burrows occur frequently on the penis and lower parts of the buttocks, less frequently on the perineum and vulva The diagnosis may be *confirmed by the*

x rays but the limit of dosage has been reached thorium X is occasionally helpful The injection of local anaesthetics with a prolonged action such as Proctocaine has its advocates but in the author s experience the injection is no more effective than simpler measures and should be reserved for patients in whom simple measures have failed

Pruritus vulvae

Pruritus vulvae should be investigated not only as for pruritus ani (with which it may be associated) but in addition special attention should be paid to gynaecological disorders especially vaginal discharge Profuse vaginal discharge may be present with little or no vulval irritation and with little or no dermatitis a variability which may be related to a change in the *p*H of the vaginal secretion Injudicious vaginal douching may be responsible Pruritus vulvae is particularly likely to occur at or about the time of the menopause and it is possible that occasionally some endocrine abnormality may be responsible In the author s experience the administration of oestrin seldom seems to help and indeed often makes the condition worse Some writers have claimed that menopausal pruritus may result from a change in the *p*H of the vaginal secretion Occasionally there seems to be a marked psychological element probably more frequently than in pruritus ani The author has not seen much relief result from psychological treatment in pruritus vulvae although it is perhaps a little more helpful than with comparable pruritus ani Glycosuria though a rare cause of pruritus ani is sufficiently common in pruritus vulvae to warrant a routine examination of the urine a moist dermatitis may be present and liable to secondary infection particularly with monilia

The principles of treatment are as for pruritus ani For very intractable and distressing pruritus vulvae section of the long pudendal nerves has been done Apart from leucoplakic vulvitis the most severe pruritus vulvae appears to be associated with a marked psychological background in these circumstances the results of even such a drastic operation as section of the pudendal nerves are very disappointing as might be expected

ULCERATIVE LESIONS

Syphilitic chancre

A syphilitic chancre may occur on any part of the skin or mucous membrane of the ano-genital region usually single and seldom larger than 1 centimetre in diameter It usually begins as a small indurated nodule often with a dark red areola The base of the ulcer may become greyish exuding blood stained serum Induration is an almost constant feature and subjective symptoms are usually slight The subsequent depth of ulceration is variable although there is seldom any gross loss of tissue Ulceration is particularly common in chancres of mucous membrane much less commonly it may be completely absent Discrete painless enlargement of the regional lymph glands is frequent but in the absence of secondary infection suppuration does not occur In the male syphilitic chancres are most often seen in the distal third of the penis In the female the incidence is predominantly on the cervix and labia majora much less commonly on the labia minora and fourchette Chancres on the labia and fourchette are often accompanied by much oedema

In the author s experience psychological treatment has unfortunately been of little value, even when there is much mental disturbance Enthusiastic psychiatrists report good results from pre frontal leucotomy in extreme instances of the disability, it is stated that the irritation persists but no longer causes distress to the patient no mention is made of the onlooker

In these circumstances, treatment of this common type of pruritus with no observable skin change is chiefly symptomatic and is directed towards avoiding local and general irritants and towards lessening the local irritability Great improvement, and sometimes cure will result if the vicious circle of scratching and rubbing can be broken Constipation and strong purgatives should be avoided Adequate cleansing is important but soap may act as an irritant and cleansing is then best done with arachis oil or liquid paraffin together with regular sponging with tepid or cold water If toilet paper causes irritation, cotton wool may be used The irritation is often made worse by hot baths even though temporary relief is frequently obtained Vasodilators of the skin, such as alcohol and spiced foods make the pruritus worse Sedatives especially at night often help although the optimal dosage varies considerably Much relief can often be obtained by using one of the antihistamine drugs for example Anthisan 100 milligrams Antistin 100 milligrams or Benadryl, 50 milligrams taken half an hour before a bout of irritation is expected A large number of local remedies has been used for the relief of pruritus ani, of which perhaps the most extravagant has been tattooing with mercuric sulphide In the author s experience the most useful application has been a crude coal tar paste, such as the following

Pix Carbon	– – – – –	15 min
Past Zinc	– – – –	ad 1 oz

This should however, be used with some caution since tar in this area is apt to set up a folliculitis As alternatives 2 per cent silver nitrate in spirits of nitrous ether or Castellani s paint may be helpful The latter is often of benefit when there is no evidence of fungus infection The patient should be warned to use all these preparations with care since the perianal skin is intolerant of any but the blandest substances This caution applies equally to local anaesthetic preparations such as carbolic acid 2 per cent with or without the addition of 1 per cent menthol in zinc cream or in calamine lotion and benzocaine 2 per cent, in zinc cream These local anaesthetic preparations are sometimes useful during an acute phase of irritation but the risk of causing a secondary dermatitis must be fully appreciated Recently one of the antihistamine drugs in a cream base, for example Anthisan cream has been helpful although it is too early to assess its real value

Frequently however local applications are either not helpful or are of temporary benefit only In these circumstances fractional dosages of x rays may be used Four to five applications of 100 r may be given at weekly intervals after which the treatment should be discontinued for a month If this proves inadequate to control the pruritus, further applications may be given up to a total of 800 r If there is any undue local reaction during treatment the individual doses should be lessened and the intervals prolonged It is useless to continue x ray treatment beyond a total of 800 r, since it is very unlikely that any good will result and if much more is given there is a risk of radiodermatitis When the pruritus is well controlled by

Scabies

Scabies burrows are particularly common on the penis but they may be seen elsewhere on the ano genital skin secondary infection and ulceration may occur

Malignant neoplasms

Malignant neoplasms may closely simulate a chancre and other ulcers Their clinical characteristics do not differ from similar neoplasms elsewhere The commonest is a squamous-cell carcinoma often associated with a patch of leucoplakia Infrequently basal cell carcinomas with various types of intra-epidermal carcinoma for example Paget s disease Bowen s disease and Queyrat s erythroplasia may occur The latter is particularly likely to develop into a squamous-cell carcinoma

Microscopy may be necessary to confirm the diagnosis of any of these neoplasms Malignant growths of the vulva do not respond well to irradiation and if possible they should be excised

Traumatic ulceration

Traumatic ulceration tends to be painful and is seldom associated with much induration As mentioned previously the possibility of an associated syphilitic infection should be remembered Rarely self inflicted lesions may be seen

Condyloma

Condylomas (*see* Chapter 18) may uncommonly undergo ulceration and simulate a chancre

Gummas

Both superficial and ulcerative gummas occur in the ano-genital area and do not differ in appearance from gummas elsewhere on the body Occasionally an early tertiary lesion may develop on the site of a primary chancre usually 2 or 3 years after the initial infection the so-called chancre redux This may closely resemble a primary chancre from which it may be distinguished by the absence both of spirochaetes and regional lymphadenopathy

Tuberculous infection

A tuberculous infection of the skin in the ano genital region almost invariably spreads from an underlying focus of infection for example tuberculous epididymitis and ischio rectal abscess and often produces characteristic *scrofuloderma* When ulceration occurs the lesion is usually shallow with bluish indurated edges and is often associated with much pain

Boils

Boils occur frequently in the ano genital area Sometimes they are associated with scabies and less commonly with glycosuria The treatment is that of boils elsewhere except that rest is often of particular value in order to minimize friction and auto-inoculation

and this may be a helpful sign in diagnosis Less frequently, chancres may occur on any part of the ano genital skin

Confirmation of the diagnosis of a syphilitic chancre may be obtained by finding the *Treponema pallidum* on dark ground microscopy in exudate from the lesion When there is any doubt, especially in the presence of secondary infection such as chancroid repeated dark ground examinations should be carried out over a period of 2–3 weeks saline dressings only being applied Especially in a chancre which has been present for some time further confirmation of the diagnosis may be obtained by evidence of secondary syphilis elsewhere or a positive serological reaction Many other kinds of ulcer in this area may closely simulate a syphilitic chancre

Soft chancre

A soft chancre or chancroid caused by a streptobacillus, *Haemophilus ducreyi* has for its essential lesion a small circular ulcer, seldom larger than half an inch in diameter, with a raised ragged margin purulent base and a tendency to bleed readily Unlike syphilitic chancre a soft chancre is associated with much pain and soreness Furthermore, in soft chancre, induration is absent or minimal and multiple lesions are almost invariable Painful bubo formation is common, often with the formation of fistulae

The infection is almost always venereal in origin but, unlike syphilis it has an incubation period of 2–3 days only By auto inoculation many lesions in varying stages of development may be seen Local gangrene is a rare complication

The incidence of soft chancre in Great Britain is small accounting for less than one tenth of the venereal ano genital sores In the tropics the incidence is much greater

The diagnosis may be confirmed by finding the organism in exudate from the lesions or by an intradermal vaccine test Details of microscopy and of treatment with vaccine are beyond the scope of this chapter It is most important to note that soft chancre is often associated with a syphilitic infection and for this reason repeated dark ground examination of exudate from the sore should be performed for 3–4 weeks before an associated syphilitic infection can safely be excluded During this period saline dressings only should be applied

Other venereal infections such as granuloma inguinale tropicum and lympho granuloma inguinale are seen very rarely in general practice in Great Britain and will not be discussed here

Herpes simplex

In the form of grouped vesicles, often recurrent herpes simplex may occur in the ano genital area particularly on the penis and may become superficially ulcer ated Again the possibility of an associated syphilitic infection should be remem bered and the appropriate investigations should be carried out There is some evidence that illicit sexual intercourse may cause an attack of herpes simplex

Herpes zoster

Herpes zoster may be seen in the ano genital region and may be recognized by the segmental distribution and associated pain

CHAPTER 44

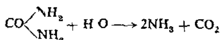
ERUPTIONS IN THE NAPKIN AREA

F G SHERRY DOTTRIDGE

THE SKIN of the buttocks and thighs of babies is constantly subject to some form of irritation There is pressure from lying in the same position and the napkins may be rough infrequently changed or badly laundered The urine may have an ammoniacal smell and there may be fluid acid stools due to incorrect diet Added to this the baby is sometimes encased in rubber drawers So it is not surprising that this area is especially prone to a series of eruptions These can be conveniently classified under two main headings (1) simple napkin erythema and (2) intertrigo

SIMPLE NAPKIN ERYTHEMA

Simple napkin erythema (Jacquet s erythema or ammonia dermatitis) is a form of contact dermatitis due to a chemical irritant The areas affected are the convexities of the buttocks the inner aspect of the thighs the tip of the penis and scrotum or the vulva the calves and heels The involvement of the calves and heels *in* a napkin rash is easily explained by the fact that a baby usually lies *in* a flexed position and the calves and heels are drawn up to the outer side of the napkin It is on these prominent areas which are in close contact with the napkin that friction by a rough material produces a faint and transient redness If the baby is then left wet for any length of time maceration results in the same areas This action is aggravated by the presence of ammonia which is produced by the action of saprophytic bacilli in the faeces These urea splitting bacilli hydrolyse urea into ammonia



$$CO\begin{matrix}NH_2\\NH_2\end{matrix} + H_2O \longrightarrow 2NH_3 + CO_2$$

It is this ammoniacal urine in the napkin which plays the most *important* part in producing a widespread and often alarming eruption If the condition is not corrected immediately faecal streptococci *infect* the damaged epithelium and erosions and ulcers result Jacquet (1905) describes four stages of simple napkin erythema

(1) Simple erythematous stage ill defined red shiny patches

(2) Erythemato vesicular or erosive stage minute vesicles appear which tend to rupture These usually remain discrete but may coalesce to form irregular figures

(3) Erythemato-papular or post erosive stage granulomatous changes occur in the eroded vesicles on the buttocks and thighs The vesicles appear as bright red papules never larger than a lentil and always confined to this area It is this papular rash which is often mistaken for a congenital syphilitic rash

Acne conglobata

Acne conglobata is the name given to an uncommon variety of pustular acne in which deep suppuration is accompanied by ulceration, sinus formation and marked scarring The buttocks and perianal area may be heavily affected, in addition to the usual acne bearing areas such as the face and shoulders Scrofulo dermia and halogen reactions may be closely simulated The diagnosis is usually made by the finding of evidence of acne conglobata elsewhere on the body, though occasionally the process may be confined to the buttocks and perianal area

Diphtheritic ulcers

These ulcers are rare in Great Britain the appearances are variable and the diagnosis usually has to be made by bacteriological examination

Monilial infection

Monilial infection which has been mentioned in a previous section (*see* page 617) may cause superficial ulceration of the vulva

Aphthous ulceration

This may occur on the vulva sometimes with similar ulceration in the mouth Recurrence especially pre menstrually is common and the cause is obscure *General ill health sometimes seems to cause a relapse, but these ulcers frequently* occur with excellent general health There is some evidence that the cause is a virus related to the virus of herpes simplex Treatment is very unsatisfactory

Owing to pain, rest may be necessary during the acute phase For local applica tion, ½ per cent aqueous solution of gentian violet may help Iron hydrochloric acid and liver injections sometimes seem to decrease the frequency of relapses

Ulcus vulvae acutum

This was the name given by Lipschutz for non venereal acute painful ulcers of *the vulva often with systemic upset and occasionally associated* with local destruc tion of tissue and scarring Young women are principally affected Similar lesions may be found in the mouth *Bacillus crassus* is almost always present in the lesions but is probably only a secondary invader These ulcers may resemble venereal ulcers and bacteriological examination may be required for diagnosis

The prognosis is benign and resolution usually takes 2–3 weeks Rest and bland antiseptic applications usually suffice Penicillin and the sulphonamide drugs appear to be ineffective

Pemphigus and bullous erythema multiforme (*see* Chapters 25 and 27) may cause vulval ulceration The diagnosis can usually be made from evidence of these disorders elsewhere

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bright red papules A few of the papules may show ulceration others will have healed leaving a reddish brown stain The flexures are free from any rash The baby is usually 6 weeks old or older and apart from occasional loose stools is healthy although it may be fretful at times

Histopathology

Sections of a vesicular lesion show that it occurs superficially in the epidermis in the position of the granular layer with the stratum corneum for a roof like the vesicle of impetigo The underlying capillaries are dilated and there is a surrounding inflammatory cellular infiltration In the papular stage the infiltration is more marked and there is a thickening of the epidermis with elongation of the interpapillary processes

INTERTRIGO

Intertrigo commences in the folds of the skin the flexures of the buttocks groins and thighs are the most common sites of affection

Friction of opposing surfaces in a plump or neglected baby is the predisposing cause and the resulting redness and slight maceration can only be seen when the



FIG 312 —Intertrigo streptococcal infection of the groins—the buttocks were not affected

folds are gently separated This simple intertrigo presents an ideal medium for infection by any lurking organisms and results in an intertriginous dermatitis

Pus coccal intertrigo

Faecal streptococci are probably the infecting organisms of pus-coccal *intertrigo* The flexures of the groins and anus are first affected but the condition may affect all the folds of the napkin area including the umbilicus in neglected cases (Fig 312) The deepest part of the flexure becomes fissured and bleeds easily whilst the sides

(4) Ulcerative stage erosions become small punched out ulcers (Fig 310) In neglected cases the condition may go on to ecthyma The ulcers become deeper with necrotic bases and crust formation



Fig 310 —Napkin erythema with impetiginized ulceration Napkins washed with soap flakes



Fig 311 —Jacquet s erythema occurring in twins The rash is most marked on the left side the side on which they slept

These stages often appear intermixed (Fig 311) and a typical case will show the skin of the napkin areas as red and shiny in some places or chapped and crusted in others Dotted over the convexities of the buttocks may be numerous small

(a) Short soaking in cold water
(b) Washing in hot soapy water no soda or alkaline soaps to be used
(c) Quick boil in water no chemicals should be added
(d) Two rinses—wring out and dry

The baby should be inspected after the daily bath and the skin of the napkin areas may be smeared with a light covering of liquid paraffin or if preferred with a good unscented dusting powder for babies Vegetable oils should not be used as they increase irritation in the presence of an alkaline urine Liquid paraffin and Vaseline are not affected by ammonia For the bath a good super fatted soap should be used sparingly and no chemicals of any kind should be added to the bath water If in spite of these precautions a simple erythema occurs the presence of ammonia should be suspected and the napkins should be given a final rinse in 1 4 000 perchloride of mercury or in a saturated solution of boric acid The amount of antiseptic left in the napkin after drying is found to inhibit the activity of the urea splitting organisms Small doses of mercury and chalk by mouth have also been found to be effective In a mild case and if the above regimen is carried out all that will be necessary is a soothing emollient application such as zinc oxide ointment or an ointment made up of equal parts of zinc oxide ointment and Vaseline If ulceration or crusts are present the following paste should be used

Hydrarg Oxid Flav - -	10 gr
Zinc Oxid - - - -	120 gr
Amylum - - - -	120 gr
Paraff Moll - - - -	ad 1 oz

This is smeared on thin strips of white gauze and applied to the ulcerated areas

When a simple intertrigo has developed the flexures must be kept as dry as possible with a good dusting powder Equal parts of zinc oxide and powdered starch make a useful powder

For the infected or pus-coccal intertrigo the chief aim is to dry the oozing surfaces as quickly as possible A 2 per cent solution of silver nitrate is applied and allowed to dry Later the following cream can be applied

Ichtham - - - -	10 gr
Zinc Oxid - - - -	60 gr
Zinc O eat - - - -	10 gr
Adeps Lan - - - -	20 gr
Paraff Moll - - - -	60 min
Paraff Liq - - - -	ad 1 oz

A monilial infection requires painting with an aniline dye such as gentian violet 1 per cent aqueous solution or in a 10 per cent spirit solution The spirit solution dries more quickly but may sting when applied The ichthammol cream can be used when all exudation has stopped Any associated enteritis should be investigated and faulty diets such as carbohydrate overfeeding should be cor rected In obstinate cases napkins should not be used and the cot sheets should be changed immediately they are wet

Penicillin and preparations of the sulphonamide drugs are contra indicated as their prolonged local application may give rise to a severe dermatitis

of the folds show a red oozing surface which becomes ulcerated or thinly crusted The lesions may spread on to the convexities, but the advancing edge is usually ill defined, unless the picture is complicated by a superimposed ammoniacal dermatitis

Monilial intertrigo

The causative organism of monilial intertrigo *Monilia albicans*, is a pathogenic yeast which is often present in the faeces, and a neglected simple intertrigo of the anal fold makes an excellent culture medium Monilial infection usually commences in the perianal area as a dark red macular rash which later becomes moist and crusted with fissures in the deepest part of the anal cleft The condition spreads upwards from the fold on to the convexities of the buttocks and the edges are well defined, scaly, and in places vesicular Any of the flexures in the napkin area may be similarly affected The condition is usually associated with buccal moniliasis (thrush) and frequently follows an attack of diarrhoea

DIFFERENTIAL DIAGNOSIS

The papular stage in the simple napkin erythema is sometimes confused with the papular rash occurring in congenital syphilis

The syphilitic rash is often well marked in the napkin area but the papules which are larger, tend to be more numerous round the anal orifice and are browny red in colour The rash appears within the first 2 months whilst a simple napkin erythema often occurs later Other signs of congenital syphilis will be found such as a macular rash on the palms and soles, snuffles and an enlarged spleen

The Wassermann reaction of mother and child should be taken when doubt arises

The main points of difference between simple napkin erythema and the various types of intertrigo have already been mentioned but a repetition may be helpful

Simple erythema is confined to the convexities and intertrigo to the folds The urine smells strongly of ammonia in most cases of simple erythema

Monilial intertrigo is usually associated with thrush of the buccal mucous membrane, and the rash is a deeper red than that in pus coccal intertrigo The advancing edge of the rash in the monilial infection is vesicular and is well defined For this reason it is sometimes mistaken for ringworm Ringworm confined to the napkin area is very rare but if suspected because of infection in other members of the family, a scraping from the vesicular edge will definitely decide the presence or absence of a ringworm fungus

TREATMENT

Prophylactic measures to prevent any irritation should consist of early training to ensure dry napkins this training may be initiated by holding the baby over a chamber after each meal The napkins should be of the smoothest material and should be changed immediately they are soiled Correct laundering of the soiled napkin is a very important item and the following routine will be found satisfactory and, it is hoped will not be considered superfluous

Pemphigus neonatorum

Pemphigus neonatorum is the name given to a bullous impetigo when it occurs in the newly born infant It does not belong to the true pemphigus group because *Staphylococcus aureus* can be found in the clear blisters The condition should be regarded as grave so long as the umbilical stump remains unhealed for an infection in that area is usually fatal The relative or nurse handling the child is often found to be a staphylococcus carrier Whitlows boils or small septic cuts should be looked for and if necessary throat swabs should be taken When the carriers have been found warning should be given that they must not touch an infant until they are free from infection

Treatment of impetigo and pemphigus

The blisters should be opened with a sterile needle and the fluid collected on swabs soaked in 1 2 000 perchloride of mercury or 1 1 000 proflavine in normal saline solution The affected area should then be painted with ½ per cent gentian violet or brilliant green in an aqueous solution proflavine is also well tolerated The umbilicus should be painted in all cases Later the mercury paste can be applied to promote healing of the raw surfaces

Scabies

If the moth r or nurse has scabies an infant is usually infected within a few days and the buttocks may be the first part to be affected with a diffuse papular rash pustules and scattered burrows The rash will very quickly become generalized and unlike scabies in adult burrows and papules will be found on the palms and soles

Treatment

The whole family not excluding the father who is so often missed should be treated preferably at a scabies clinic Infants do not tolerate sulphur or benzyl benzoate applications but daily inunction of the following carried out for one week cures the condition

Bals Peruv – – – –	60 gr
Paraff Moll Alb – – –	ad 1 oz

All clothing and sheets should be changed frequently and boiled

Seborrhoeic dermatitis

Seborrhoeic dermatitis occurs in infants but it is rarely found in children between the ages of from 1 to 12 years

The condition is similar to the adult form the scalp and flexures being the sites of predilection In infants the groin gluteal cleft and umbilical area are commonly affected the primary lesion being a pink spot covered with a greasy yellowish scale These spots tend to form circinate patches The scales are liable to be rubbed off in the flexures On the scalp heaped up greasy scales are found on the frontal area The so-called cradle-cap of infants if it persists is usually a form of seborrhoeic

PROGNOSIS

Once the condition is recognized and a new *regimen* started the rash quickly clears but so long as the child remains *draped in napkins* there is a risk of a relapse. *The parents can be assured that the child will not be more than usually liable to* skin trouble in later life because of this.

OTHER INFANTILE ERUPTIONS

Impetigo contagiosa

This infection is most common on the face and limbs but on the *napkin area* impetigo may appear as a bullous *eruption* some of the blisters being as large as walnuts. The fluid is clear when the blister first forms but it *rapidly becomes* opaque and purulent. Large weeping *surfaces* result when the blisters break. *Some member* of the family will be found to have impetigo or a *staphylococcal* infection, such as boils or whitlows.

Ulcerative impetigo or ecthyma

Ulcerative impetigo or ecthyma occurs in weakly infants following attacks of measles, *chickenpox* or scabies. Brownish crusted, deep ulcerations with a surrounding rim of dark red inflammation are found on the legs and buttocks. Healing is slow and deep scars remain.



FIG 313 —Dermatitis gangraenosa infantum

A similar but more acute condition is described as dermatitis gangraenosa infantum (Fig 313). Fever, diarrhoea and wasting occur and the infant should be admitted to hospital immediately. The condition is *fortunately* rare but the mortality is reported as 50 per cent of cases. Injections of penicillin are worth a trial.

Minor degrees of naturally occurring deficiency

The question naturally arises whether changes of a minor degree which occur in the skin are attributable to deficiency of vitamin A In Great Britain on the present restricted diet deficiency is theoretically possible especially in those who do not take their full allowance of milk eggs butter or margarine because of allergy or for other reasons Careful surveys however have not revealed signs of phrynoderma or indeed of any similar dermatosis which can be satisfactorily ascribed purely to insufficient vitamin A in the food

Experimental deficiency

Diets containing but little vitamin A have produced dryness of the skin and follicular hyperkeratosis but not the appearance typical of phrynoderma Clearly however there are difficulties in carrying deprivation of the vitamin to the point at which serious changes in the eye are likely to occur such as are usually observed in the latter condition Moreover the reserve of vitamin A in the liver is usually sufficient to prevent signs of deficiency appearing in the skin in less than 1–2 years

Vitamin A and diseases of the skin

Since an adequate supply of vitamin A appears to be necessary for the integrity of epithelium deficiency might predispose to diseases of the skin If this were at all common many patients with dermatitis might be expected to yield evidence of deficiency but this is not the case Dark adaptation tests and estimations of the vitamin A in the plasma have shown that there is no significant difference between the vitamin A nutritional status of persons suffering from various skin complaints and the general population with the exception of certain specific diseases mentioned below It may be assumed therefore that vitamin A deficiency is not an aetiological factor in common diseases of the skin Furthermore these tests show that no significant deficiency occurs as the result of the common dermatoses Little benefit is to be expected therefore from treatment with vitamin A in such conditions unless there is some special reason for suspecting deficiency

In three rare diseases of the skin however—Darier s dyskeratosis pityriasis rubra pilaris and acute disseminated lupus erythematosus—deficiency of vitamin A is frequently though not always present

Darier s dyskeratosis and pityriasis rubra pilaris

In both of these disorders dark adaptation tests and estimations of vitamin A in the plasma have shown that a relative deficiency is common though by no means invariable Many cases of each but again not all respond remarkably to large doses of vitamin A

It is clear that lack of vitamin A is not the sole cause of either disease the essential criteria for such an assumption are not fulfilled Nevertheless deficiency of vitamin A plays a part in the aetiology How it arises is not known the possibilities include dietary deficiency failure of absorption of vitamin A or of carotene failure to convert the latter into vitamin A inability of the liver to store or release vitamin A as required abnormal destruction or utilization

Treatment —Daily doses of 100 000–200 000 i u of vitamin A should be given for at least 3 months If no improvement has been noted by the end of this period

the surface of the skin There is evidence that this is so, as is shown by reports from Eastern countries of persons suffering from serious dietary deficiency Frazier and Hu (1931) in China, Nicholls (1933) in Ceylon Loewenthal (1933) in Uganda and others, have described the appearance of persons suffering from severe and pro longed deficiency of vitamin A, and it is on their accounts that the following short notes are based The condition is commonly known by the apt title of toad skin

Aetiology

It is assumed that toad skin is caused by deficiency of vitamin A because it occurs in those whose diet is markedly lacking in this vitamin because it is fre quently associated with night blindness, xerophthalmia and other changes in the eye known to result from vitamin A deficiency, and because of the curative effect of the vitamin

It must be admitted, however, that some workers have been unable to confirm these observations and that so far as I am aware experimental studies have not reproduced the condition Nevertheless the balance of evidence is in favour of toad skin being caused by deficiency of vitamin A, though other factors may be involved

Morbid anatomy of the skin

The horny layer of the epidermis is generally thickened and plugs of horny material distend the openings of the hair follicles and project from the surface of the skin forming the characteristic papules There is round cell infiltration in the dermis and degenerative changes are sometimes apparent in the sebaceous glands

Clinical description

The skin looks and feels dry and harsh to the touch and irritation is noticeable There is an eruption of papules largely follicular in distribution, which appears most frequently on the sides of the neck the extensor surfaces of the limbs and on the buttocks Many of the papules are minute acuminate and easy to remove when this is done a hair is often found coiled beneath Others are large, often extending to ¼ inch in diameter flat topped shiny and deeply pigmented Acne form lesions may be present on the chest and back especially in young adults, but they differ from the papules of acne vulgaris in that they very rarely become pustular In young children dryness of the skin is apparently the most noticeable feature the follicular papular lesions only developing gradually as the child increases in age

Diagnosis

The diagnosis is suggested by an eruption of papules follicular in distribution some of which are deeply pigmented in a person living on a poor diet contain ing very little vitamin A Other signs of vitamin A deficiency are nearly always present at the same time such as night blindness xerophthalmia and kerato malacia In doubtful cases the curative effect of vitamin A will settle the diagnosis

Treatment

Large doses of vitamin A such as 200 000 i u daily should be given in addition to a good mixed diet rich in proteins and other vitamins

diminish the activity of the intestinal flora should be avoided when deficiency of vitamin B is suspected

Since vitamin B_1 is used in the metabolism of carbohydrates relative deficiency *is prone to occur when* the food contains too much carbohydrate and too little protein

Disorders of the skin associated with deficiency of vitamin B

Pellagra

This is the most important disease associated with deficiency of the B complex in which changes in the skin are marked

The malady is rare in the British Isles though it is probably commoner than reports suggest since minor degrees are easily overlooked The cutaneous manifestations are merely one feature of the disorder only a brief account of which is given below

Pellagra is characterized mainly by dermatitis chiefly of the exposed skin by alteration in the mucous membrane of the mouth and lips by diarrhoea and by mental changes

Aetiology —The essential cause of pellagra is deficiency of the vitamin B complex This may be brought about in several ways for instance by a poor diet containing an inadequate quantity of the B complex or by interference with the absorption utilization or storage of the vitamin due to chronic alcoholism or disease of the alimentary tract or liver Factors tending to precipitate an attack include infections exposure to actinic rays and increased metabolism such as occurs in pregnancy or during hard physical work

The constituent of the B complex which when deficient is most important in producing pellagra is nicotinic acid The body is able to make this vitamin for itself to some extent by the action of bacteria provided that there is an adequate supply of first-class protein in the food. The amino acid tryptophane is believed to be the basis from which nicotinic acid is manufactured and Marrack (1948) has suggested that the importance of protein in preventing pellagra may be that it enables the intestinal flora to synthesize nicotinic acid

Deficiency in nicotinic acid however seldom occurs alone Other components of the B complex such as thiamine riboflavine and pyridoxine are usually deficient as well and are involved in producing clinical signs and symptoms Frequently vitamin A and vitamin C deficiencies exist simultaneously with this B deficiency because the subjects of this disorder have usually lived for many months on a poor diet

The disease is more common in women than in men and occurs in institutions for the mentally defective and in rural areas rather than in cities

Morbid anatomy of the skin —The horny layer of the skin is thickened and some of the cells retain their nuclei and stick together (parakeratosis) The stratum mucosum is also thickened and dips down between the papillae into the dermis which is infiltrated with round cells and is somewhat oedematous An increase of pigment is found in the basal cells of the epidermis and in the chromatophores of the *dermis* The sebaceous glands are sometimes atrophied

it is unlikely that the patient will benefit from vitamin A If betterment has occurred the same dosage should be continued until improvement ceases when the dose may be reduced to about 50 000 i u daily Alternatively administration may be stopped altogether, to be resumed in full doses at the least sign of recurrence

Acute disseminated lupus erythematosus

In this very rare and severe disease low levels of vitamin A in the serum have been reported The lesions in the skin are merely one manifestation of a widespread disorder and it is unlikely that they are connected directly with the shortage of vitamin A which possibly arises from hepatic dysfunction

Treatment —Vitamin A should be given in doses of 100 000–200 000 i u daily but no dramatic effect is to be expected

Diseases of the skin in which deficiency of vitamin A has been suspected

This large group includes such conditions as ichthyosis xerodermia lichen spinulosus, keratosis pilaris, acne, seborrhoeic dermatitis alopecia areata and many other dermatoses

Ichthyosis —While there is some reason to suspect that vitamin A deficiency may be of aetiological significance in certain cases of ichthyosis, further work is required before the evidence can be accepted as conclusive Meanwhile it may be noted that administration of vitamin A has only occasionally been reported as causing im provement, even in cases with low plasma levels The writer has not detected any benefit from large doses of vitamin A given to 6 cases for periods of 3 months or longer

Of the other dermatoses it may be said that no sufficient evidence exists at present for believing the deficiency of vitamin A to be of importance in the causation or treatment of the disease Further work may necessitate modification of this view

VITAMIN B

It is now realized that vitamin B is not a single substance but that it consists of a large number of elements known collectively as the B complex Additions are still being made to the group so that the total number of components which may ultimately be included is not yet certain Only those elements deficiency of which is believed to be associated with disorders of the skin are mentioned below

It is extremely difficult to form a clear picture of the effect produced by deficiency of a single member of the B complex for several reasons

The various members of the group are found together in certain foods so that when deficiency occurs in nature it is likely to affect the whole complex rather than a single component

The results of experimental deficiencies are complicated by the difficulty in pro viding a diet containing only traces of the vitamin under investigation while maintaining an adequate and well balanced supply of the other members of the group and by the ability of the body to form some if not all of these vitamins for itself

It is by the action of bacteria in the intestines that these vitamins are made so that drugs such as the insoluble sulphonamides or penicillin by mouth which

was made worse by giving raw egg white and in two cases was cured by intra muscular injections of 100-200 milligrams of biotin Thus while there is some evidence that biotin deficiency can cause dermatitis in man such a condition must be extremely rare Possibly this rarity is due in part to the body s capacity for making biotin in the intestines

Pyridoxine

Pyridoxine (vitamin B_6) has proved to be of value in the treatment of cheilosis It is reported that certain cases which did not respond to administration of ribo flavine have been cured by 20-100 milligrams of pyridoxine given intravenously Deficiency is associated with dermatitis in experimental animals and seborrhoeic dermatitis in man has been treated with pyridoxine on the supposition that deficiency might be an aggravating factor in humans While some success has been claimed it must be admitted that the case for pyridoxine therapy has yet to be proved

Peripheral neuritis

Although peripheral neuritis is not primarily a dermatological problem it may appear when disease of the skin is present and may prove troublesome That it may occur in pellagra has already been mentioned but it may also be responsible for severe pain in leprosy chronic alcoholism and many other conditions in which the skin may be involved In such cases vitamin B_1 is worth a trial and it is well to inject it intramuscularly in doses of 25 milligrams daily

Pink disease (erythroedema)

Some workers have found that vitamin B is of value in the treatment of acro dynia when given as the whole complex or as a particular member of the group especially B_1 Of the latter 1-2 milligrams should be given twice daily by mouth or injected intramuscularly With this treatment it is said that the bright erythema and desquamation which are characteristically present on the hands feet face and elsewhere rapidly become less marked and improvement in other signs occur simultaneously

Vitamin B in old age

It has been claimed that the B complex is of value in relieving the pruritus pigmentation and the other nondescript eruptions from which elderly persons are apt to suffer (Stevenson Penton and Korenchevsky 1941)

Summary

Vitamin B is a complex substance composed of a number of different entities which are found together in certain foods Shortage of one of these substances therefore seldom occurs alone For this reason and to maintain a proper balance between the various members of the group it is always advisable to prescribe the whole complex as well as the particular vitamin deficiency of which is believed to be causing symptoms While it is probable that minor degrees of vitamin B deficiency exist in Great Britain today there is no satisfactory evidence that such deficiency is of importance in causing common diseases of the skin While a number of disorders are known to be associated with deficiency of the B complex

those found in cerebellar disease and in subacute combined degeneration of the cord

Judging from reports ariboflavinosis must be rare in Great Britain and this is the writer s experience also The present diet provides so small a surplus of riboflavine that signs of deficiency might be expected to occur fairly frequently especially in those who do not drink milk or who live on restricted diets That this is not so may possibly be due to the ability of the body to form riboflavine for itself for there is evidence that this can happen in human beings

Diagnosis

Ariboflavinosis should never be diagnosed unless a majority of the signs described as characteristic is present Circumcorneal injection for example, occurs in many other conditions and is in no way diagnostic of ariboflavinosis when existing as a solitary phenomenon This also applies to angular stomatitis which may be caused by ill fitting dentures infection with fungi or cocci or chemical irritants used in lipstick and which sometimes accompanies hypochromic anaemia and may be present in Parkinson s disease

When the diagnosis remains in doubt riboflavine should be given in adequate doses and the effect carefully noted If no improvement occurs within a week or two some other factor must be concerned in producing the lesions

Treatment

Fifteen milligrams of riboflavine should be given daily by mouth If there is diarrhoea or vomiting or disease of the alimentary tract likely to hinder absorption, the vitamin may be injected intramuscularly in similar amount It is important that other members of the B complex be given simultaneously and this may be accomplished by administering crude liver extract ½ ounce three times daily by mouth or 1 ounce of yeast in each 24 hours The diet should be full and varied and contain plenty of good protein and foods rich in the B complex such as milk cheese, lean meat and whole grain cereals

Biotin

This vitamin forms part of the B complex and has the peculiar property of uniting readily with avidin a protein in egg white By so doing it ceases to be available for use in the organism and deficiency may arise Deficiency has been produced in rats by feeding them with large quantities of egg white when dermatitis and loss of hair developed amongst other signs notably on the face around the eyes on the forefeet and flanks The dermatitis was thought to resemble seborrhoeic dermatitis in man It is claimed that mild desquamative dermatitis a greyish colour of the skin and geographical tongue have been produced in human volunteers living on a diet poor in biotin and containing much egg white and that the dermatitis and other signs were cured by a daily dose of 150 milligrams of biotin A case has also been reported of dermatitis on the face arms hands and legs in an Italian who devoured raw eggs in enormous quantities (about 72 weekly) The dermatitis largely disappeared with good mixed feeding and adequate biotin therapy Three cases of dermatitis of the face in infants believed to be caused by biotin deficiency have been described by Brown (1948) In each the dermatitis

was made worse by giving raw egg white and in two cases was cured by intramuscular injections of 100-200 milligrams of biotin Thus while there is some evidence that biotin deficiency can cause dermatitis in man such a condition must be extremely rare Possibly this rarity is due in part to the body's capacity for making biotin in the intestines

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the exact part played by deficiency of each member of the group in producing signs and symptoms has not yet been satisfactorily ascertained The following list of diseases connected with deficiency of particular members of the B complex is accordingly merely provisional and will need to be altered and extended as knowledge increases

Deficiency of the whole B complex is especially associated with pellagra and sprue, and possibly also with the pruritus of aged persons

Deficiency of vitamin B_1 may occur in pellagra, leprosy, sprue, alcoholic and other forms of peripheral neuritis and possibly also in pink disease

Deficiency of vitamin B is believed to be the chief cause of the symptoms described as ariboflavinosis

Deficiency of nicotinic acid is especially manifest in pellagra and may appear in sprue

Deficiency of biotin (vitamin H) is responsible for the exceedingly uncommon dermatitis resulting from egg white injury

Deficiency of pyridoxine (vitamin B_6) may exist in pellagra and possibly may be of aetiological significance in some forms of cheilosis and in very rare cases of dermatitis

Folic acid and vitamin B_1 may be of value in the treatment of sprue

VITAMIN C

The results of a deficiency of vitamin C are numerous and widespread, and only those affecting the skin can be considered here

Severe and prolonged deficiency leads to scurvy Lesser degrees, too slight to cause scurvy might conceivably be a predisposing cause of various dermatoses but there is little evidence that this is so Surveys have not demonstrated a connexion between minor deficiency and the development of common skin troubles In Great Britain the diet during World War II and the post war period has provided but a small amount of vitamin C less indeed than is considered by many as necessary for the maintenance of perfect health yet there has been no outbreak of skin disorders attributable to this cause It would thus appear that minor deficiency of vitamin C is not of aetiological importance in disorders of the skin

Scurvy

The most important disease arising from deficiency of vitamin C is scurvy in which characteristic lesions develop in the skin and mucous membranes

Aetiology

It has been known for many years that scurvy is liable to develop in those whose diet contains insufficient quantities of fresh fruits and vegetables The substance contained in these foods deficiency of which causes scurvy, was found to be vitamin C later identified as ascorbic acid Deficiency of other vitamins frequently exists at the same time and produces anomalous signs and symptoms

Morbid anatomy of the skin

In the acute stage of scurvy the most characteristic changes are found in the dermis which shows free red blood cells and blood pigment lying about the vessels

hair follicles and sweat ducts Around the blood vessels there is in addition an infiltration of lymphocytes

Clinical description (adult form)

Only those signs likely to be of interest to the dermatologist are considered here

After 4–5 months on a diet containing very little vitamin C the skin becomes dry and follicular hyperkeratotic papules appear, first on the outer aspects of the arms and legs and later elsewhere These are followed by minute haemorrhages around the hair follicles most numerous on the legs and by haemorrhages into the skin subcutaneous and other tissues The skin over the larger haemorrhages may be red hot and tender Bleeding from the mucous membranes is common notably in the mouth The gums especially when teeth are present become soft swollen and spongy and bleed on the lightest touch Later infection sets in the breath becomes foul and the teeth fall out Ulceration may be troublesome in the mouth on the ankles and at other points of pressure An interesting feature of a recent experimental study was the increase in severity of acne lesions after 5 months restriction of vitamin C in the diet among those who had previously suffered from this malady No new cases developed

Diagnosis

The characteristic features of scurvy and a history of long continued dietary deficiency of vitamin C usually make the diagnosis clear A blood count may be required to exclude acute leukaemia and in cases of doubt estimation of the state of vitamin C nutrition may be undertaken though such tests are not very satisfactory Finally the effect of treatment may be noted

Treatment

The patient should be kept in bed and given 200–500 milligrams of ascorbic acid daily by mouth A dose of 200 milligrams may be given intramuscularly if there is reason to suppose that disease of the alimentary tract or vomiting will interfere with absorption A full and varied diet rich in other vitamins should be given with several ounces of fresh extract of rose hips or blackcurrants or the juice of oranges or lemons If deficiency of any vitamin other than C is suspected it should be given in adequate quantities as a supplement to that in the food

Infantile scurvy

For a detailed description of the condition works on diseases of children should be consulted It is sufficient to say here that a tendency to haemorrhage is the most notable feature loss of blood occurring from the mucous membranes into the skin subcutaneous tissues muscles and around the bones The infant is miserable fretful and resents handling Changes in the bones may be detected by skiagrams

Treatment

If sufficient fruit juice rich in vitamin C is added to an infant s diet to provide about 30 milligrams of ascorbic acid every day there is little danger that he will develop scurvy Should he do so 50 milligrams of ascorbic acid may be given three times daily in addition to about 1 ounce of fresh orange juice

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Lupus erythematosus

Mild ard superficial cases of lupus erythematosus were found by Burgess to respond best and it was noted that photo sensitivity frequently disappeared under treatment

He advi es that foci of infection should be removed and that 100-300 milligrams of vitamin E (mixed tocopherols) should be given daily by mouth for mild cases Those of long standing may require double these amounts After apparent cure a maintenance dose of 50 milligrams of α tocopheryl daily should be continued The tocopherols should preferably be taken between meals and on an empty stomach and the d et should contain little fat Occasionally gastro-intestinal disturbance headache and lassitude result necessitating cessation of treatment Similar doses may be administered by intramuscular injection this is sometimes followed by discomfort and persistent infiltration an indication that this form of therapy should be discontinued

Histological examination showed repair of collagen and inflammatory infiltra tion and disappearance of epithelial hypertrophy under treatment

In the writer s experience vitamin E in the form of α tocopheryl acetate has proved disappointing and his experience supports that of Sweet (1948) who found this preparation to be of little value

Other conditions

In the other conditions listed above sufficient controlled work is not yet avail abl for study on which a true judgement can be formed Trials are proceeding and further reports are eagerly awaited Meanwhile it is clearly justifiable to try the eff ct of vitamin E in these disorders many of which are singularly resistant to the usual forms of treatment

Oth r maladies for which vitamin E is claimed to be of value are pink disease and scleroedema of premature infants For the former wheat germ (which also contains other vitamins) is commended by Forsyth (1941) while for the latter 110 milligrams of vitamin E on two successive days are advised by Gerloczy and Navori (1947)

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Other uses of vitamin C in dermatology

Colloid milium

It is claimed that vitamin C will cause the disappearance of the degenerative changes in the skin which characterize colloid milium

Formation of collagen and wound repair

In the absence of vitamin C collagen does *not form properly* and the healing of wounds is slow and incomplete, the scar being weak and tearing easily Wherever, therefore severe and prolonged deficiency of vitamin C is discovered in the presence of a wound in the skin 250 *milligrams of ascorbic acid should be ordered* daily for several weeks

Pigmentation of the skin

In vitro experiments have shown that ascorbic acid hinders the formation of pigment from dopa a substance commonly believed to be the precursor of the pigment melanin which is found in the skin It has, therefore, been suggested that vitamin C should be given to patients with Addison s disease to prevent the formation and deposition of pigment in the skin some good results have been claimed from the procedure

Skin grafts

Experiments with animals have shown that deficiency of ascorbic acid prevents a skin graft from taking It would seem to be a wise precaution, therefore to *ensure that a patient awaiting a skin graft is saturated with vitamin C if deficiency* is suspected

VITAMIN D

For uses of vitamin D in dermatology *see* Chapters 3 19 and 31

VITAMIN E

It has been suggested that vitamin E is of value in the treatment of certain disorders of the skin associated with degenerative changes in the collagen

Such conditions are grouped together under the title of collagenoses by Burgess and Pritchard (*1948*) and include lupus erythematosus *necrobiosis* lipoidica diabeticorum granuloma annulare lichen sclerosus et atrophicans scleroderma morphoea and hardening of the skin of the legs accompanied by chronic ulceration

Burgess has reported excellent results in lupus erythematosus and good though variable, effects in the other dermatoses He observed also that large doses of vitamin E appeared to increase the activity of the sebaceous glands Exactly how the vitamin acts is not understood but *the beneficial effect is* attributed to regenerative changes produced in the collagen

Vitamin E consists of a number of closely related tocopherols and it is in this form that it has been used by Burgess In Great Britain most *of the work* has been done with *a synthetic preparation* α tocopheryl acetate and it is possible that the relatively poor results reported here may be due to the different preparation used lacking as it does certain members of the series

They are however important because such a skin lesion may be the first sign to appear temporarily paramount in the production of symptoms or it may be the only sign in a puzzle of symptoms

Some diseases have constant skin rashes such as measles German measles chicken pox and scarlet fever others have a prodromal and a true rash such as smallpox Infection with the spirochaete of syphilis may lead to the primary chancre a secondary widespread eruption and a late tertiary localized lesion in the skin Some diseases have occasional more or less fleeting rashes such as typhoid paratyphoid typhus and glandular fevers The exact details of the pathology of tuberculous infection of the skin are being more clearly defined day by day and the involvement of the skin as a result of blood stream infection by staphylococci streptococci meningococci and during a pyaemia is more frequently recognized Again a lesion in the skin may be due to an aberrant infection as in cutaneous diphtheria and cutaneous amoebiasis

Any acute infection may be characterized by herpes simplex in its early phase—in fact, in certain conditions it is of diagnostic value—and any fatal infection may give rise to purpura in its final stage At one time the presence of herpes in pneumonia was regarded as a favourable sign haemorrhagic lesions in smallpox and scarlet fever on the other hand indicate a grave prognosis

INFLUENCE OF FOCAL INFECTION

The influence of toxic processes on the skin is still a matter for debate Fever rigor and sweating are well recognized as symptoms of the toxaemia due to many microbic infections and the effects of certain toxins on special parts of the body such as those of tetanus and diphtheria on nerve tissues are proven On the other hand the toxaemia of focal sepsis which is of such great importance is less satisfactorily established There may be few or no symptoms which one can honestly and dogmatically attribute to a suspected primary focus of infection yet treatment designed to eradicate such infection is often beneficial The toxaemia may manifest itself as a fibrositis arthritis anaemia rarefaction of bone loss of weight or a lowered resistance to superficial infection of the skin and a tendency to eczematous reactions or urticaria The spread of organisms or their toxins from a single focus is recognized in syphilis when the primary chancre or scar is seen in association with a widespread syphilide or in scarlet fever when proven haemolytic streptococcal infection of the pharynx is associated with a characteristically distributed punctate erythema In a ringworm infection of the feet scalp or beard it is the toxins rather than the fungus which are responsible for the widely distributed trichophytide eruptions

It is perhaps wise to indicate here that boils carbuncles and infected wounds if not adequately treated by enforced rest or by immobilization of the affected part may themselves be important foci leading to further boils as a result of spread by the blood stream or direct contagion

It should be remembered that the anterior nares is a very common habitat of the staphylococcus and the nose is the commonest reservoir for the dissemination of cutaneous staphylococcal lesions The post nasal space is a popular home for the meningococcus and the pharynx for the haemolytic streptococcus Both the

CHAPTER 46

CUTANEOUS MANIFESTATIONS OF GENERAL DISEASE

G B MITCHELL-HEGGS

DISORDERS of the skin were not recognized as a special field for medical study and record until the middle of the eighteenth century and unfortunately the minute details of appearance colour and texture were then made the chief subject for study This concentration on the morphological characteristics was followed by a special histology and pathology, separated from that of the other systems During the last three decades however, there has been a gradual convergence of interest between the pathologist dermatologist and general physician Increasing knowledge in psychiatry, endocrinology and allergy has also led to changes in the interpretation of the mechanism or metabolism in disease processes affecting the skin (Wile 1932)

The skin has been described as the almost perfectly fortified frontier of a closed world (Carrel 1948) but in addition today it is recognized as an organ of fundamental importance in the general physiology of the body It is a vast but delicately controlled heat regulating mechanism an excretory and secretory organ In addition, it has other important biophysical and biochemical functions Through it for example the rays of the sun can influence vitamin production health and growth Essential dermatoses such as necrobiosis lipoidica diabeticorum, are being fitted into general pathology and accepted as cutaneous reflections of systemic morbid processes The clinician must consider the state of the skin as a guide to the measure of man s good or ill health, in the way that an animal s coat has been considered from time immemorial

Elsewhere in this book the disorders known to be due to infection by bacteria, fungi, viruses and spirochaetes are described Benign and malignant developments in the epithelium and in the dermis are differentiated and the changes in the skin due to disorders of the blood cardiovascular and reticulo endothelial systems are described in cases in which the skin shows the most striking and consistent manifestations

In many diseases however signs and symptoms outside the cutaneous system attract the attention of patient and doctor and the skin manifestations of many general diseases may thus be overlooked in spite of the fact that they are numerous enough to fill a large text book and in many cases are of diagnostic importance

Skin manifestations may occur in disease of practically any system of the body Pre existing skin lesions may be altered exacerbated, or even at times relieved by pathological conditions of some other part of the body Consideration is now being given to conditions in which the pathology of the skin is secondary in importance to that of other organs and in which the skin manifestations described are only incidents in the course of a disease affecting some other organ of the body

SKIN LESIONS IN BACTERAEMIAS

Petechiae near the ankle under the finger nails and toe nails on the extensor aspect of the elbow and the pressure points and a history of transient erythema sug est a blood stream infection In subacute bacterial endocarditis transient red



FIG 315 —Keratodermia blennorrhagicum

tender lesions up to 1 millimetre in diameter are likely to be seen on the pads of the finger tips (Osler s nodes) The heart and urine should be examined and an effort should be made to palpate the spleen

Painless cartilaginous nodules over the knuckles or elbows are commonly rheumatic Erythema nodosum is characterized by red painful and tender nodules occurring on the shins and occasionally the arms This may be due to drugs in particular sulphathiazole or to streptococcal or rheumatic infection More rarely meningococcal infection must be considered and in a young child primary tuberculosis is a possibility

RARE SYSTEMIC DISORDERS WITH CUTANEOUS MANIFESTATIONS

Crops of nodules which are tender or painful purple or red in colour occurring on forearms chest and abdomen in association with fever may be the first sign of periarteritis nodosa and justify a biopsy

Possibly related conditions acute disseminated lupus erythematosus for example may indicate an underlying endocarditis (Libman Sachs) It should be remembered that diffuse sclerodermia is likely to be associated with severe visceral fibrosis and even calcification

Practitioners who see many cases of skin disease find that oedema of the eyelids is frequently associated with neurodermatitis or the early elephantiasis which

gonococcus and staphylococcus can use the prostate gland for a semi permanent residence

Among definite although rare, entities, keratodermia blennorrhagicum is worthy of mention The illustrations (Figs 314 and 315) are of a young man with chronic urethral and prostatic infection iritis arthritis and rupial lesions on the arm leg and both feet The lesions are soft keratoses with a tendency to umbilicate Such a picture may be seen not only in gonococcal infections but also in cases of urethritis of unproven aetiology (possibly virus possibly bacterial) associated with arthritis and iritis (Reiter s syndrome)

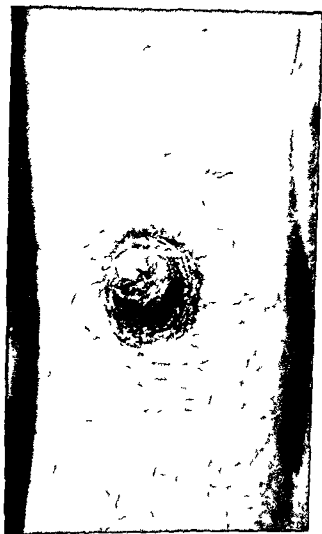


FIG 314 —Keratodermia blennorrhagicum

Considerable judgement is required in assessing the relative importance and in arranging the appropriate treatment of a septic focus when it is found in association with skin disease but such a focus should not be lightly dismissed just because concrete scientific proof of a relationship between the two is lacking

A thorough examination of the buccal cavity, radiological examination of the roots of teeth transillumination of the accessory sinuses and search for chronic genito urinary gall bladder and appendicular infection have all helped in the elucidation of problem cases After careful assessment and appropriate special treatment a large number of cases have been greatly improved and some apparently cured (Barber 1927) Focal sepsis is important in pustular bacteride, seborrhoeic dermatitis rosacea certain eczematous eruptions and in a few cases of guttate psoriasis and there is a casual relationship between infective foci and erythema multiforme dermatitis herpetiformis and alopecia areata

In addition to vaccine therapy there are now antibiotics like penicillin streptomycin and all the drugs in the sulphonamide group which can be tried with little fear of making the patient worse and which may render unnecessary an operation with all its attendant risks

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Practitioners who see many cases of skin disease find that oedema of the eyelids is frequently associated with *neurodermatitis* or the early elephantiasis which

follows recurrent erysipelas of the face It must not be forgotten, however, that it may be an early sign of trichiniasis (Garrod and Maclean 1941, Sheldon, 1941) Dermatomyositis may closely simulate trichiniasis with the same stiffness and pain in the muscles but is usually associated with heliotrope oedema of the eyelids (O Leary, 1949) a feature not present in trichiniasis

In these less common conditions it is the extra two minutes allowed for differential diagnosis and the consideration of *all* the possibilities that lead towards the correct answer

AFFECTIONS OF THE SKIN COMMON IN ONE PART OF THE WORLD, RARE IN ANOTHER

An entity common in one part of the world may be rare in another and perhaps not be given the consideration it deserves For example ulceration of the angle of the mouth might be called perleche and be of little significance in temperate climates not requiring energetic systemic dietetic and local therapy In the tropics, however, a similar appearance can rapidly develop into spreading gangrene of the cheek (noma) The few cases I have seen were all in children debilitated by malnutrition and recurrent attacks of malaria and dysentery

Whereas it is well recognized that insects causing disease can be transported from one country to another by aircraft it is less commonly realized that certain diseases of the skin can in a somewhat similar manner be carried outside their normal *milieu* Cutaneous leishmaniasis mycotic and actinomycotic infection anthrax leprosy and granuloma inguinale must be considered and are described in Chapters 34 and 35 In particular doctors treating patients who are *travelling* from one part of the world to another should always bear these possibilities in mind

Again, in the tropics one would be more likely to think of amoebic infection of the skin resulting in a rapidly spreading ulceration The floor of the ulcer is purulent with flat indolent granulations the edge undermines the skin in an irregular fashion leading to a polyfigurate edge and red or cyanotic colour of the surrounding skin Such ulceration may be seen around the anus or near the healing wounds of an operation on the large intestine in any climate

Bacterial examination of ulcers of the skin is not necessary or practicable in every case but when the response to appropriate therapy is slow it may be of great value In temperate climates haemolytic streptococci and staphylococci are often found in ecthymatous ulcers Diphtheritic infection is rare but in the tropics it is sufficiently common to be of importance It may be either comparatively benign without systemic disturbance or sufficiently severe to involve the heart and virulence tests may be essential

Mild varieties of rickettsial infection (typhus) can lead to transient erythema and papular eruptions on the extensor aspect of arms and shins (Archer Baker and Mitchell Heggs 1943) and in suspected cases a Weil Felix test may be helpful A patient complaining only of an indolent ulcer the result of a bite from a rat rabbit or ferret, may also suffer from bouts of sweating and have a moist dermatitis

of the hands and feet and actually be a case of rat bite fever due to spirochaetal infection

MULTIPLE FACTORS IN SENSITIZATION TO SUNLIGHT

The influence of light on the skin is fully described in Chapter 6

The skin is normally able to protect us against light by the production of pigment by an increased production of sebum or depth of epithelium Coloured races have the most satisfactory skin from this point of view In fair skinned people the reaction to ultra violet light is the production of redness and freckles A small group of unfortunate individuals suffer from xerodermia pigmentosum in which the skin rapidly passes through the stage of redness and pigmentation to the production of keratoses and malignant growth Others suffer from a very mild persistent sensitivity to light manifesting itself every spring This may be due to lack of pigment or an altered metabolism such as exists in hydroa aestivale haematoporphyrinuria impaired liver function endocrine deficiency and certain obscure states which may be grouped as intestinal toxaemia In some cases deficiency of the vitamin B complex can lead to light sensitivity as in pellagra

The type of severe sunburn that it is possible to get in the Mediterranean in the tropics on a glacier or on the sea can lead to a persistent hypersensitivity of the skin to sunlight in a number of such cases this sensitization may be associated with and perhaps secondary to mycotic infection of the skin

Other condition in which light sensitivity plays an important part are lupus erythematosus rosacea schistosomiasis and sensitivity to sulphonamides and penicillin or the vehicles containing them

In many of the chronic or recurrent cases some or all of these factors may be present and unless treated prevent or delay cure In addition it is possible that a blend of endocrine and psychosomatic factors may be present as in vitiligo

THE CIRCULATORY FACTOR

Disorders of the skin are from time to time indirectly influenced by circulatory changes Chronic congestive failure leading to oedema of the ankles and stretching of the skin may be a reason why an eczematous eruption fails to respond in this area to treatment which has been satisfactory in other parts of the patient s body In fact waxing and waning dermatitis of the legs has been recorded in association with cardiac failure In chronic hypertension eczematous eruptions may persist on the ankles and hands even in cases where sympathectomy has produced a fall in the blood pressure and marked amelioration of all other symptoms

Rosacea which fails to respond to the usual local and general therapy may be aggravated by heart disease the most clear case I have seen being associated with tricuspid valve regurgitation

In certain cases where there exists a poor peripheral circulation due either to varicose veins or to a lowered cardiac output or arterial disease patchy pigmentation and a thin skin which is more susceptible than usual to minor injury

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may be found The patients usually volunteer that these patches have followed an insect bite and are rather surprised to find that they may on the contrary be associated with, and in the main be due to disease of the heart or blood vessels Varicose veins are usually due to the effects of standing or pregnancy, less commonly to chronic congestive heart failure or an obstruction to the venous return from the limbs by a mass or thrombus and very rarely directly to the lifting of heavy weights An unusual case was that of a professional weight lifter who attended the Hospital for Diseases of the Skin He developed varicose veins as a result of contracting his diaphragm during the course of his work

In addition to the usual examination of the dorsalis pedis vessels for pulsation, and Trendelenburg s test for venous incompetence it is quite a good plan to remember a simple test for impaired peripheral circulatory function such as is seen in thrombo angiitis obliterans The patient s leg should be raised for a few minutes until it is pale and then lowered the circulation is impaired if the colour does not return when the leg has been in a dependent position for 10 seconds Alternatively sufficient pressure should be applied on the skin to produce blanching and the colour should return when a similar period has elapsed

The skin lesions associated with cardiovascular diseases mentioned above may sometimes be seen together with those that occur in renal disease

THE INFLUENCE OF RENAL INEFFICIENCY

It is important to remember that the skin may store water chlorine and minerals that it assists in certain circumstances in the excretion of water, and that skin disorders occur in approximately a fifth of patients who suffer from all forms of nephritis and kidney trouble Oedema of the eyelids with oedema elsewhere, may be an early feature of renal failure Cutis marmorata of the legs is an occasional feature of acute Bright s disease

Twenty per cent of cases of essential hypertension with azotaemia complain of pruritus In over 10 per cent of cases urea frost the name given to a salt like deposit of urea is seen around the nose neck and shoulders particularly in the *moribund* Barber (1948) says In the actual oedema of malnutrition there is lowered concentration of plasma proteins and particularly of albumin so that the albumin–globulin ratio is altered these changes may be found in certain cases of eczema chiefly of the extremities associated with subcutaneous oedema

METABOLIC CHANGES

Diabetes mellitus and diabetes of the skin

A patient with undiagnosed diabetes may occasionally present himself on account of a disorder of the skin Itching is a frequent complaint and does not necessarily vary with the degree of hyperglycaemia Twenty five per cent of patients with diabetes mellitus have diseases of the skin in particular furuncles carbuncles epidermophytosis eczema balanitis or vaginitis or xanthoma palpebrarum They have a tendency to develop intertriginous moniliasis under the breasts in the navel axillae and natal cleft, with irritation soreness and even painful cracks in the skin Sugar left from evaporation of sweat can irritate the skin Eczematous

eruptions around or near the mouth eyes nose anus or vulva demand an examination of the urine

In addition to true diabetes mellitus there is an entity—diabetes of the skin Urbach found that there exists in some cases a high fasting sugar and a flattened skin sugar tolerance curve in the presence of normal fasting blood sugar and a normal blood sugar tolerance curve Biopsy of the skin to prove this diagnosis is needed but is not always practicable The condition should be considered in cases of chronic eczema furunculosis and vaginal or anal pruritus A certain number of Urbach s cases responded well to insulin and to a low carbohydrate diet and the clinical improvement was accompanied by a similar change in the fasting skin sugar and in the skin sugar tolerance curve No transition of skin diabetes into frank diabetes has been observed This skin diabetes is not widely known mainly because of the necessary punch biopsies and new analytic methods (Urbach 1945)

A definite though uncommon entity is *necrobiosis lipoidica diabeticorum* in which papules or plaques appear on the shins apparently after minor injury The commonest manifestation is one or more waxy looking patches with shiny surfaces across which small vessels are running The edges are red slightly raised and indurated and not tender There are two groups one associated with a diabetic blood sugar curve and another not associated with abnormal blood sugar findings

ENDOCRINE CHANGES

Apart from the recognized clinical pictures due to endocrine abnormality (Le Marquand and Tozer 1943) there are a number of less definite disorders in which the skin undergoes changes as a result of excess or deficiency in the secretion of one endocrine gland or an alteration in the balance of activity of several glands

> Since the effects of androgens and oestrogens respectively on the surface epithelium of the skin hair follicles and on the sebaceous glands now appear clear these structures afford valuable evidence of the preponderating influence of one or the other sex hormone on the skin of a given person and of any change that may occur in such influence at certain times or in certain circumstances (Barber 1948)

Cushing s syndrome

Patients often attend for treatment of freckles moles telangiectases and hirsuties If one sees several of the following features in such a patient—full moon face obesity marked striae distensae beard development in females tender deposits of fat near the face neck and trunk but not near the limbs—one should think of Cushing s syndrome due to basophil adenomas This indicates a reference for appropriate special examination rather than immediate local treatment of freckles moles or beard

Striae distensae are common in association with pregnancy endocrine abnormality and obesity but they may be evidence of an active septic focus and when present on the chest may indicate intrathoracic disease

Hyperthyroidism and hypothyroidism

It is important to remember that excessive sweating may be associated with early hyperthyroidism The patient may complain of the *sweating itself or of* conditions secondary to moist skin such as epidermophytosis, or plantar warts In the presence of *hyperthyroidism the skin is nearly always* smooth and elastic, with a warm moist and velvety feel The skin of the face chest and back may be *more greasy* and pigmented in a number of cases, vitiligo is present Occasionally such cases may even present themselves with oedema of the eyelids or chronic urticaria

Many patients with diseases of the skin especially the aged, complain of feeling cold, but the possibility of hypothyroidism should always be borne in mind especially when the skin has a pale yellowish tinge and is dry and coarse to the touch The administration of thyroid extract frequently accelerates the healing of large ulcers on the legs or feet, especially when they are associated with such a type of skin obesity and mental retardation Hypothyroidism is one of the factors that should be considered when chilblains or acrocyanosis appear for the first time in middle life *Apart from the patients who complain of painful* fissures and cracks in the skin of their palms and soles, due to external irritants chronic mycotic infection or eczema there are cases in which these changes are due to the *combined* effects of diminished sweating and a tendency to hyperkeratosis Sometimes they are part of the picture of myxoedema at other times there is also ovarian dysfunction, such as in keratodermia climactericum (Barber, 1948)

The association between hypoparathyroidism and deranged calcium metabolism is fairly well recognized but there is also a possible *association with* chronic paronychia due to monilial infection which is less well known and resistant cases should be reviewed from this angle This and the association between impetigo herpetiformis and deficiency of parathyroid action is still debatable

Addison's disease

An established case of Addison s disease with asthenia widespread pig*mentation and low blood pressure,* is unlikely to be missed but the clinician should be on the alert for the early stages of deficiency in adrenal gland secretion Hyperpigmentation *of exposed areas, especially the knuckles,* is *an early* feature, later all areas which normally pigment during pregnancy or which are subject to pressure friction and irritation become darker while the skin *around* the mouth escapes

Puberty, the menopause and pregnancy

The endocrine changes of puberty may produce an unpleasant smell associated with the increased apocrine sweat gland activity in the armpits, and *severe acne* or *furunculosis* may follow sebaceous gland activity on the face chest and back at this time, the whole process leading to a chronic anxiety state *It is better to* advise some *local treatment* rather than simply to indicate that these conditions will probably clear up in the fullness of time

Acne vulgaris

As yet no constant or characteristic alterations in androgen and oestrogen excretion are demonstrable in male and female acne patients as compared with normal persons of the same age group but in general groups of men and women with acne excrete less oestrogens but more androgens than do the corresponding normal groups

In carefully selected cases the use of stilboestrol or its equivalent in an attempt to balance androgen excess is justifiable but the risk of menorrhagia in women and enlargement of the breasts loss of energy and of libido in males must always be remembered Indiscriminate and empiric use of endocrine therapy is still not encouraged and even in selected cases should not be prolonged

Patients are sometimes worried during pregnancy and at the menopause about the development of angiomas papillomas and fibromas and may know that they can occur in association with tumours of endocrine glands It is a good plan to reassure them that they are common features of pregnancy and of the menopause (Barber 1946)

THE INFLUENCE OF PREGNANCY

The multiple changes associated with pregnancy predispose women to allergic conditions When practicable extra care should be taken to diminish the risk of sensitization of the skin to external irritants and it should be remembered that the polyvalent patch test sensitivity is five times as great in pregnant women as in non pregnant women (Hinselmann 1925)

Urticaria may develop or be exacerbated with each pregnancy in a way that is comparable with menstrual urticaria and these eruptions tend to recur on the same area of skin

It is interesting to compare this phenomenon with the return of hair growth after the second month of pregnancy in certain cases of alopecia and loss of hair again several months after the confinement Barber (1948) suggests that this phenomenon is probably due to an increase followed by a decrease of oestrogens In the only case under my care it is difficult to separate the endocrine from the psychogenic factors

Again drug eruptions may appear at this time and should always be considered in the presence of an otherwise inexplicable eruption It is perhaps wise to remember that there is a tendency for monilial infection of the nail bed under the breasts or in the groins to develop or become worse during pregnancy and even without leucorrhoea this may be the cause of a troublesome pruritus vulvae Severe cases of so-called eczema during the last five months of pregnancy should be examined to exclude the diagnosis of dermatitis herpetiformis (Rosenfeld 1944 and Liston and Cruickshank 1940)

CHANGES OF SENILITY

In general the failure of ovarian function at the climacteric leads to an increased tendency to cutaneous sensitization Tags and papules develop on the skin of the neck and in a small number of cases keratoses appear on palms and soles In

addition there are the well known hot flushes or flashes, of the face or neck and a tendency to anxiety states

As the post menopausal state approaches senility the epithelium becomes thin and the papillae are flattened In both sexes the elastic fibres in the dermis are less, leading to characteristic wrinkles and the sebaceous gland activity is reduced in most places but sometimes increased on the scalp and cheeks Peripheral circulation is impaired, and the patient is perhaps doing too much for his age All the factors which play a part in the process of aging increase the difficulty in curing many cases of seborrhoeic dermatitis of the scalp ears and face When practicable such patients should be helped by a preliminary spell in bed Real rest of body and mind combined with a light, well balanced diet is essential to the success of topical therapy

GROWTH AND DISTRIBUTION OF THE HAIR

During recent years new light has been thrown on the anomalies of hair distribution by studies of endocrine disorders The male type of baldness is produced by circulating androgens It is unknown in eunuchs and a common result of virilizing tumours This type of alopecia is associated with profuse hair growth on the trunk and limbs Luxuriant hair growth on the scalp probably depends on oestrogenic stimulation and to some extent on normal thyroid secretion Hypothyroidism is characterized by coarse lustreless scalp hair and frequently alopecia which is usually incomplete and marginal and associated with loss of the outer third of the eyebrows

The growth of pubic and axillary hair is maintained in both sexes by circulating adrenal cortical hormones The testicular hormone (testosterone) produces the characteristic beard suprapubic pre sternal and limb hair of males and the ovarian hormone probably only influences the curliness of pubic hair

Loss of pubic and axillary hair occurs in haemochromatosis and myxoedema and is of adrenal origin Hypogonadism in the male merely causes reversion to the female distribution and in the female produces straight pubic hair

When pituitary function is deficient total alopecia may result In Simmonds's disease hair growth on the scalp may be produced by thyroid extract and axillary and pubic hair by adrenocorticotrophic hormone Oestrogens produce eyebrow growth and abundance of scalp hair Testosterone produces return of axillary pubic and eyebrow hair with darkening of the hair on the scalp (Simpson 1948)

There are thus three groups of hairs (Fig 316)

(1) Those uninfluenced by hormones—vellus eyelashes and perhaps eyebrows medial two thirds

(2) Those stimulated at puberty by adrenal activity—axillary and pubic

(3) Those stimulated by gonadal male hormones—beard chest abdomen and limbs

CHOLESTEROL METABOLISM

An abnormal cholesterol metabolism is recognized in association with psoriasis hypertension and the Hand Schuller Christian syndrome

It is worth while recalling that xanthomas with dark pigment around the eyes and a yellowish tinge of the skin are often associated with a low basal metabolic rate and high blood cholesterol Twenty per cent of ca es of this type in one series had serious cardiovascular lesions hypertension coronary sclerosis or angina pectoris These skin lesions are therefore enough to justify a thorough medical overhaul Although the treatment of xanthelasma or xanthoma palpebrarum s essentially local xanthoma tuberosum has diminished with improvement of liver function

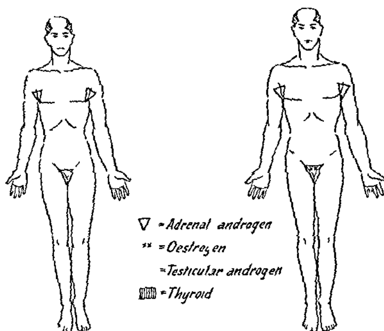


FIG 316 —Probable hormonal factors maintaining normal hair growth

True diabetic xanthomas such as are seen in association with diabetes nephritis and occasionally pregnancy disappear when the underlying cause is eliminated

GOUT

Whereas gout was a common entity at the beginning of the twentieth century and probably an early thought in the clinician s mind it is now so uncommon as to be easily missed Forty seven per cent of gouty patients in the days of Dr Garrod had eczema (Garrod 1859) and if a case of eczema persists after adequate investigation and treatment and is associated with tophi on the knuckles or on the cartilages of the ear with or without recurring arthritis or bursitis gout should be considered In addition generalized pruritus or even whitlows in elderly men sometimes respond to treatment as for gout with colchicum and cinchophen Nevertheless

there is not a generally accepted clinical picture of 'gouty eczema' (Graham 1946)

THE RETICULO ENDOTHELIAL SYSTEM

Skin changes in anaemia

In chronic dermatoses most patients falsely feel convinced that there is an underlying disorder of the blood which could be revealed by some test. The disease could then be properly treated and the skin condition quickly cured. Unfortunately, so many disorders of the skin are due to extraneous causes that it is possible to overlook cases in which disorders of the blood do in fact play a part.

As a general rule if papules or nodules occurring in the skin cannot readily be diagnosed it is wise to arrange for a biopsy, and for an examination of the blood. Pallor of the face must always be observed, but it is not a very helpful estimate of the degree of anaemia. The Tallqvist blotting paper test, Duke's test, examination of the conjunctivae and tongue only give extremely rough indications and when in doubt proper blood examinations must be done.

Chevallier (1936) enumerates the following dermatoses as occasionally seen in anaemias: rhagades of the fingertips and lips, smooth atrophic tongue and buccal mucosa, pruritus vulvae, precocious greying of the hair and intertriginous erythema. Corroboration of these impressions is still lacking although a similar list which includes koilonychia is given by Simon (1938).

A brief mention only can be made of the greenish pallor or chlorosis seen in young women with anaemia due to deficiency of iron, the coffee brown patches occurring on the forearms and dorsum of the hand in pernicious anaemia and the ulceration and pigmentation of the legs in congenital haemolytic anaemia. Plum coloured nodules appearing in the skin may be an important feature in leukaemia. This neoplastic anaemia may at the beginning be associated with a normal blood picture and only produce a leukaemic picture later.

Leukaemia, particularly the monocytic and lymphatic varieties, may be associated with small tumours in the skin. It may also manifest itself by pruritus associated at first with a localized erythema and later with a generalized exfoliative erythroderma; a few of these patients respond to radiotherapy but unfortunately in many cases the prognosis is grave. Similarly, local and later generalized pruritus may be a very early manifestation of leukaemia.

It is perhaps wise to record here the unfortunate systemic effects of thioglycolic acid used in certain 'cold' permanent waves. These have included anaemia, toxaemia and functional nervous symptoms.

It is useful to remember that a patient with hypochromic anaemia, with perhaps dysphagia or the complete Paterson or Plummer Vinson syndrome, may first present herself on account of a dermatitis with fissuring around the angle of the mouth which might ordinarily be thought to be due to leakage of saliva as a result of malfitting dentures or sensitivity to toothpaste, cigarettes or lipstick. If the condition is due, however, to hypochromic anaemia the tongue may be sore or perhaps burning and reddened and excoriated. Routine examination may frequently reveal that the nails are brittle, painful, hollow and shaped like a spoon with round edges and central depression (Witts 1946).

It sometimes happens that during a patient s treatment for say vascular naevus keratosis or telangiectasis he mentions an incidental symptom such as bleeding of th nose It is very important then to think of other diseases One may instance hypertension polycythaemia rubra vera haemophilia leukaemia or purpura essential or secondary to drugs such as Sedormid or gold Occasionally it may be the first symptom of a generalized perhaps familial telangiectasia It may follow acute infections particularly with haemolytic strains of staphylococcus or streptococcus or it may usher in a fever such as typhoid In general when there is any question of a blood dyscrasia suitable haematological investigations should be performed without delay for example red and white cell and platelet counts bleeding time clotting time and so on Repeated haematological examination may be helpful in some cases since a slight change in the blood picture observed over a period of time can sometimes lead one to the right diagnosis

The reticulo-endothelioses usually produce tumours which lead to a diagnosis in the departments of internal medicine or surgery but occasionally intractable pruritus particularly of the shins may be an early feature of Hodgkin s disease and may precede lymphadenopathy by two years and possibly be associated with a high blood sugar (Wiener 1947) It must be remembered that nodules on the face and limbs may be part of a general sarcoidosis with involvement of the lungs (*see* Chapter 19)

RESULTS OF DRUG THERAPY

The treatment which is administered to certain cases in the form of arsenic may go on for so long that the patients forget that they are taking anything which might affect the skin Such patients may attend on account of arsenical hyperkeratoses of the palms and soles Arsenic given together with a bromide to control fits or arsenic used in the treatment of leukaemia deserves mention here Generous consumption of cough medicines containing iodides the continued use of nasal and throat sprays containing silver nitrate compounds and long courses of gold therapy should all be remembered (*see* Chapter 24)

NEOPLASMS WITH SKIN MANIFESTATIONS

In the same way that biopsy will lead to the diagnosis in xanthomatosis the reticuloses and leukaemia it may lead to the detection of carcinoma Cutaneous involvement is very unusual and indicates that the metastases must be widespread and th prognosis extremely grave Skin metastases from visceral cancers are rare probably occurring not more often than in 1–3 per cent of cases Since there is no flow of lymph directed from the viscera towards the skin the metastases are likely to originate by direct extension from a primary lesion or still more often from secondary cancers in the lungs or in the liver Superficial and cutaneous thrombo-ses may be associated with viseral carcinoma The exception to this is lymphatic or direct extension in mammary carcer Lymphosarcoma and melanosarcoma are probably more apt to metastasize to the skin (Fig 317) than are the other more common cancers They both form cutaneous and subcutaneous nodules or plaques which in some cases appear on the surface in enormous numbers The metastases of melanoma are in 1 out of 3 cases entirely or partially pigment free (amelanotic) the melanotic character of the cells being demonstrable only by the positive dopa

reaction (Wiener, 1947) Pathological examination is usually necessary to determine the primary growth

Acanthosis nigricans, an uncommon condition in which pigmentation papillae and keratoses occur in the axillae, on the back of the hands and feet, nape of the neck genitals inner aspect of the thighs elbow bends umbilicus and perianal region is frequently associated with a visceral neoplasm The clinician may, however see cases of visceral neoplasm in which pigmentation and keratoses may develop as a result of radiotherapy the effects of which must not be confused with acanthosis nigricans



Fig 317 —Lymphosarcoma

Recently there has been some accumulation of evidence to associate itching with malignant disease of internal organs It is characteristically accompanied by flecked or diffuse pigmentation and may be caused by the same agencies as acanthosis nigricans *It is an* interesting fact that in some cases itching is localized and precedes the appearance at the same spot of non itchy metastases the itching and accompanying inflammation seems to be the expression of an early reaction between skin tissue and tumour *cells* Possibly a similar process *accounts for* the early itching in mycosis fungoides and leukaemia These diseases have been mentioned but it must not be forgotten that in all of them itching alone may be the earliest symptom (Goldsmith 1939)

Occasionally one may encounter elephantiasis due to lymphatic blockage by neoplasm, or nutritional changes secondary to sympathetic involvement by a growth

HERPES AS A CLUE TO THE DIAGNOSIS OF INTERNAL DISORDER

Wiener (1947) states that herpes zoster of the corresponding region may though rarely be the only manife tation of a visceral disease such as a peptic ulcer gall stones or cardiac disease and I have seen one case associated with a diseased appendix Secondary zoster is more commonly due however, to lesions of the posterior spinal roots for example tumours syphilitic radiculitis meningitis or subarachnoid haemorrhage It may be evidence of inorganic arsenic intoxication and was a feature in the Manchester outbreak of arsenical poisoning (Price 1941)

Herpes simplex occurs frequently in pneumococcal pneumonia meningococcal meningitis and malaria Haemorrhagic herpes simplex occurs in febrile conditions associated with a tendency to bleeding it is frequently seen in spirochaetosis ictero haemorrhagica (Weil s disease) and may occur in acute leukaemia or organic arsenical poisoning

SIGNIFICANCE OF ABNORMAL SWEATING

Disord rs of sweating may be of help in the early diagnosis of internal disease Excessive sweating is a feature of certain infections such as acute rheumatic fever infectious mononucleosis rat bite fever and pulmonary or visceral tuberculosis and is also seen in association with hyperthyroidism cerebral tumours and severe lesions of the cord These require their specific therapy

Sweating associated with acute and chronic anxiety states may respond to bromides belladonna or adequate rest or a holiday All should be considered b fore other measures such as radiotherapy to the skin and surgical interruption of sympathetic stimuli are undertaken Unilateral anidrosis or hyperidrosis indicates the necessity for an examination of the thyroid gland cervical region and thorax

ATYPICAL INFANTILE ECZEMA AND PINK DISEASE

In babies a generalized atypical so-called eczema in which the child is apathetic rather than restless tends to sweat frequently and perhaps avoids the light may be a very early case of pink disease This condition may be associated with sheath like desquamation on hands and feet comparable with that seen in scarlet fever also furunculosis and pyodermia In certain cases because of the intolerable itching of the skin and photophobia the child rubs and burrows its face in the pillow

DISORDERS ASSOCIATED WITH SYPHILITIC AND TUBERCULOUS INFECTIONS OF OTHER ORGANS

Systemic syphilitic disorder may be associated with chronic ulceration of the skin leucodermia or scarring Tuberculous infection of the lung may be associated with lupus vulgaris erythema nodosum Bazin s disease rosaceous tuberculides or papular necrotic tuberculides of the arms and legs

DISTURBANCES OF THE MIND

Psychosomatic disorders may be associated with the development of a dermatitis artefacta, in which the lesions are of a bizarre nature and atypical distribution

Itching in bouts affecting the whole body, or confined to certain areas such as the anus vulva, scrotum, extensor aspects of forearms and shins or the nape of the neck is frequently an expression of an anxiety state frustration phobia or an undue tendency to habit formation Medical advice and help combined with local therapy often relieves these cases where the latter alone has failed In many cases the care and treatment by psychiatrists is essential, and most beneficial Excessive washing associated with fear of infection has led to intractable dermatitis until the phobia has been controlled Unusual untidyness of the hair dilatory shaving and dirtiness may be early warnings of mental disease (*see* Chapter 28)

CUTANEOUS MANIFESTATIONS OF GASTRO INTESTINAL DISORDER

Cutaneous symptoms are rarely seen in gastro intestinal disorder Hyperacidity is more common among the acute dermatoses or acute attacks of chronic disease especially seborrhoeic dermatitis Hypochlorhydria has however, been found in chronic eczema neurodermatitis urticaria rosacea, moniliasis and kraurosis vulvae

Rosacea was found in 3 5 per cent of 595 cases of gastro intestinal disorder (Wiener 1947) and in some groups for example peptic ulcer and colitis the percentage was slightly higher Nevertheless gastro intestinal disorder should always be considered when chronic eczema urticaria and rosacea are present and are not responding to appropriate therapy

There is however probably more than a coincidental relationship between duodenal ulceration and burns of the skin It is just possible that elimination of toxic substances from the skin into the stomach may be the cause of gastric and duodenal ulcers following severe burns though more recently it has been suggested that arterial shunts in the gastric and duodenal vessels are responsible for the ulceration in these cases

Ulcerative colitis may be associated with chronic dermatoses, including ulceration on the lower legs The appearance and disappearance of the skin lesion may reflect the course but not the extent of the colitis (Wiener, 1947)

Stomatitis and glossitis are very common features in sprue, tenderness, small ulcers at the edge of the tongue and loss of papillae leading to a smooth glistening surface, are valuable early reminders

SKIN MANIFESTATIONS OF DISORDERS OF THE LIVER

In infective hepatitis and in most cases of jaundice the patient is more interested in his colour and depressed feeling than in the irritation that is normally present but is not severe enough to arouse complaint Occasionally however, it may become bad enough to arouse comment The degree of severity of the jaundice bears no relation to the severity of the irritation Excessive bathing and scratching may lead to a true eczematous eruption in such cases

Cirrhosis of the liver is uncommon nowadays and some of the early and late effects are likely to be overlooked The obstruction to the intra hepatic branches

of the portal vein produces a rise in pressure in its tributaries This leads to dilatation of the collateral circulation which normally exists between the portal and general venous systems The enlargement of the anastomoses is associated with a sallow complexion isolated capillary or arterial angiomas and spider naevi on the face neck and back and red or purple areas of skin may be produced by the uniform distension of small venules (Hurst 1946)

Severe cases may show evidence of loss of balance between androgens and oestrogens because the latter are not detoxicated with the result that enlargement of the male nipple and loss of axillary and pubic hair may occur

Redness of the palms especially of the hypothenar eminence has been seen in 25 per cent of a series of cases of cirrhosis The picture can be evoked by oestrogens and is seen in association with rheumatoid arthritis chronic sepsis and pulmonary tuberculosis (Wiener 1947) I have seen it in pregnancy from the third month onwards

Disturbed liver function also appears to manifest itself in photodermatoses drug eruptions rosacea and hydroa *vacciniforme* Even in the absence of icterus xanthelasma may be associated with some impairment of liver function only demonstrable by complicated tests

THE INFLUENCE OF CHRONIC CONSTIPATION

There is a definite association although difficult to prove by scientific standards between protein putrefaction and carbohydrate fermentation and some cases of endogenous eczema urticaria pruritus and infantile eczema A starvation diet has improved a number of such cases a spell at a spa with or without bowel washouts has improved others Some cases are aggravated by an aperient or by a single enema but improve after thorough evacuation of the bowel Orthodox medicine must not blind itself to the benefit produced by some of the ancient treatments now practised in modified form by quacks and herbalists as natural cures Vaccines derived from faecal bacteria have helped more than a few cases including those of pruritus ani associated with haemolytic streptococcal proctitis

ANOMALIES OF PIGMENTATION

Increased cutaneous pigmentation may be physiological or pathological Physiological increase in melanin pigment in the skin occurs after exposure to light and during pregnancy The pigmentation of pregnancy affects particularly the axillae breasts linea alba and groins Pigmented naevi frequently show deeper pigmentation during pregnancy

Pathological increase in pigmentation is frequently of endocrine origin In acromegaly large pigmented macules frequently occur on the face and upper part of the trunk In thyrotoxicosis a generalized increase in pigmentation is common The pigmentation of Addison s disease is generalized being more marked on the exposed parts and flexures Buccal pigmentation is characteristic occasionally leucodermia occurs In haemochromatosis (bronze diabetes) the pigment is mainly haemosiderin but melanin formation is stimulated The skin has a slatey brown colour which is most marked in the genital region and on exposed areas

Certain ovarian tumours are sometimes associated with pigmentation of the pregnancy distribution and *frank chloasma may occur* *In* subacute bacterial endocarditis the *cafe au lait* complexion is common and in chronic hepatic and renal failure the skin is dusky in colour Increased melanin deposits in the skin occur as a result of prolonged arsenical therapy *Rain drop depigmentation* on a pigmented background is characteristic of inorganic arsenical absorption Post arsphenamine pigmentation is mahogany brown

Silver and gold *are deposited in the skin and stimulate* melanin production particularly on the light exposed areas Stilboestrol may produce pigmentation of the pregnancy type

Tar and oil workers develop photo-sensitivity resulting in melanosis of the exposed parts X rays in destructive doses produce atrophy telangiectases pigmentation and depigmentation

Rare diseases associated with pigmentation

Neurofibromatosis is associated with *cafe au lait* spots In some instances the pigmentation may be present without tumours the diagnosis in these cases is made by inquiry into the family history

Idiopathic steatorrhoea may produce pellagrous skin pigmentation or a generalized putty coloration The faecal fat analysis in this condition may be normal, and fat balance study may be necessary to make the diagnosis Spontaneous haemorrhages may occur in the skin from associated vitamin deficiency

Hodgkin s disease Gaucher s disease and other reticuloses show various pigmentary anomalies Ochronosis—a rare metabolic disorder with cutaneous pigmentation—shows brownish pigmentation of the cartilages of the ears and sclerotics The urine of these patients darkens on exposure to air and reduces Fehling s solution on heating

The cutaneous lesions of pellagra consist of scaly pigmented patches on the exposed parts Diarrhoea and mental changes are frequent In a person who has lived abroad fever hepato splenomegaly and pigmentation should lead to investigation to exclude kala azar Pigmented warty lesions in the flexures occur in acanthosis nigricans and the patient should be investigated for visceral *carcinoma*

Depigmentation

This includes diminished or absent pigment in the skin Albinism is a *congenital* disorder in which the pigment of the eyes skin and hair is absent It may be localized or generalized Loss of pigment production may be the result of local destructive processes interfering with melanoblastic function *This occurs in* lichen sclerosus and guttate scleroderma

Tinea versicolor frequently produces depigmentation Total failure of melanoblastic function occurs in vitiligo This is the commonest *depigmentary* disorder Well defined patches occur on the face neck and backs of the hands The edge of the surrounding skin is heavily pigmented the cause is unknown There is an association perhaps more than coincidental between *alopecia areata* leucotrichia leucodermia and psoriasis One or more of these may appear in the same patient or in different members of the same family Leucodermia of the neck is a frequent

sequel of secondary syphilis in females Melano leucodermia occurs rarely in association with certain rare diseases such as exophthalmic ophthalmoplegia and fibrous dysplasia of bone (Albright s syndrome)

In a patient who has lived abroad for some time the possibility of leprosy should be considered the depigmented macules in this condition are anaesthetic

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CHAPTER 47

BIOPSY ITS INDICATIONS AND TECHNIQUE

J H TWISTON DAVIES

INDICATIONS

BIOPSY is the minor surgical operation by which a piece of skin is removed for the purpose of making histological sections Normally the operation should not take much longer than a couple of minutes of the clinician s time provided that suitable instruments are at hand and a good technique is practised Precisely the same technique may, of course be used for the excision of any small lesion that it is desired to remove for cosmetic or other reasons Moreover, whether or not the excision is made primarily for diagnostic purposes, removed material should always be sectioned unless its nature is perfectly certain It has been said that many patients demanding the removal of a mole have at the back of their minds the idea that it may have begun to develop malignancy Though other methods of *destruction such as high frequency fulguration* are sometimes to be preferred (for example near the mouth where constant movement may interfere with the healing of an incision) surgical excision for this reason if not for any others besides is the method of choice While the view that incomplete surgical excision can provoke malignant changes in a mole is probably as ill founded as the practice of removing *every mole in case it develops into a naevus tumour* any mole which shows signs of activity should be excised without delay It is not very rare for a subacute inflammatory process to develop in a mole and in such a case which may cause much alarm, excision together with a reassuring histological report is the best line of treatment Excision should never of course be undertaken when proof of malignancy is afforded by the presence of metastases for there is a considerable body of evidence that removal of the primary lesion accelerates their development and in any case the fatal outcome is impossible to avoid

Epitheliomas whether basal cell or squamous-cell in situations where excision can be undertaken without risk of disfigurement should be removed with the knife in preference to exposing the patient to the hazards of present day *x ray* treatment Not only is it difficult clinically to distinguish radio resistant from radio-sensitive basal cell tumours—and the former include not only the basal-cell naevi but also the dreaded morphoeiform or scirrhous rodent ulcer—but modern radiological opinion favours high dosage applied to an area greatly exceeding that of the growth *This results in a conspicuous circular depressed scar* which in old people may break down in cold weather and require further destruction with diathermy The line of excision in a basal cell growth need never encroach more than 3 millimetres on healthy skin especially if the exact limits have been first *determined* by curetting thoroughly with the sharp spoon Squamous carcinoma needs a wider margin of safety Growths of the pinna are particularly apt to metastasize and

when such a growth exceeds 15 millimetres in diameter the whole pinna must usually be sacrificed

Warts on the other hand should never be excised The tumour in this case is purely epidermal and it can easily be removed without any scarring at all by curetting with the sharp spoon After excision warts very often recur in the scar and are then much more difficult to deal with On the sole of the foot excision is nearly always followed by a tender hypertrophic scar incurable and often disastrous

A good biopsy technique therefore has a wide field of usefulness outside its proper function as a diagnostic procedure

Only experience can teach when biopsy is likely to help in making a diagnosis but quite apart from the question whether a given lesion is likely to yield the secrets of its pathology to this method of examination there are other considerations which it is important not to overlook The average level of section-cutting technique is well below that needed for skin histology In many small laboratories the bulk of the section cutting is of necropsy material and it is often entrusted to a junior technician who may not even realize that sections of skin to be of any value have to be cut in a plane at right angles to the surface

Very few general pathologists have sufficient practical knowledge of dermatology to give a useful opinion and even an experienced dermatohistologist will usually admit that in the interpretation of a section it helps enormously to have seen the case At the very least he will require information about the sex and age of the patient and the site and duration of the lesion In fact the circumstance that a biopsy is contemplated should rather encourage the attempt at a good clinical description of the lesion than condone its omission

Thus four factors are concerned (1) the nature of the disease (2) the quality of the microtomy (3) the experience of the histologist and (4) the clinical information at his disposal While at one end of the scale there are a few morbid states which present pathognomonic features so conspicuous and characteristic that they can be identified in the sections produced by the average provincial hospital laboratory at the other end there are nuances which can only be interpreted by individuals who have devoted their lives to the subject and in this sort of case a very high quality of microtomy is necessary as well

Given sections prepared by a technician specializing in skin work the average dermatologist with some training in histology can obtain help in 57 per cent of his biopsies (Twiston Davies 1938) but the greater intuitive flair of the dermatohistologist would be needed in order to extract the same value from material prepared by the section-cutter in for example the laboratory attached to a medical school

The following is a list of skin conditions in which biopsy may be useful The diseases are grouped in three schedules

(A) Conditions constantly presenting a pathognomonic feature too conspicuous to be obliterated by bad technique

(B) Conditions presenting demonstrable features capable of recognition after training but liable to serious modification by bad technique

(C) Conditions in which *recognition* depends entirely on experience and intuition

TABLE

CONDITIONS IN WHICH BIOPSY IS INDICATED

A	B	C
Angioma	Acanthosis nigricans	Acne varieties
Basal cell epithelioma	*Bindegewebsnaevus*	Adenoma sebaceum (Pringle)
Calcinosis	Bowen s disease	Adiponecrosis lipoidica
Chondrodermatitis nodularis	Cutaneous horn	Bullous diseases
Colloid milium	Darier s disease	Carcinoma (secondary)
Follicular cyst	*Delhi boil*	*Eczema varieties*
Hidrocystadenoma papilliferum	Eczema	Epidermodysplasia verruciformis
Hidrocystoma	Epithelioma (squamous)	Epithelioma varieties
Leiomyoma	Glomus tumour	Eruptions drug
Lichen sclerosus	Granuloma annulare	Erysipelas
Milium	Granuloma telangiectaticum	Erythema multiforme
Molluscum contagiosum	Herpes zoster and simplex	Erythrodermia
Naevus mollis	Impetigo staphylococcal	Fibrosarcoma
Paget s disease of nipple	Keratoma senile	Keratodermia blennorrhagicum
Pemphigus vegetans	Leprosy	Keloid
Plantar wart	Lichenification	Linear eruption
	Lichen planus	Mycosis fungoides
	Lupus erythematosus	Naevo-carcinoma
	Lupus verrucosus	Naevus durus
	Lymphocytoma	Panniculitis varieties
	Myoblastoma	Parapsoriasis
	Myxoedema	Reticulo-endotheliosis
	Neurofibroma	Sarcoma
	Nodulus cutaneus	Seborrhoeic eczema
	Poikilodermia	Tuberculides
	Psoriasis	Vascular diseases
	Radiodermatitis	Xanthoma varieties
	Rosacea	
	Sarcoid	
	Sebaceous adenoma	
	Senile wart	
	Tuberculoid granuloma	
	Urticaria	
	Xanthoma	

Outside the above categories we must bear in mind certain conditions depending for their recognition on chance or on the existence of other evidence The malignancy of a naevus tumour for example cannot be determined unless the section happens to include evidence of metastasis Fungus is rarely visible in sections of ringworm cocci seen in sections cannot be identified with certainty and the tuberculoid granuloma of syphilis to most workers is indistinguishable from that of tubercle

IMPORTANT POINTS IN TECHNIQUE

It has already been indicated that the scope of histology in any dermatological practice depends greatly on the quality of section cutting available Indeed apart

from the identification of the conditions in schedule (A) and a very rough classification of material as epitheliomatous tuberculoid or banal inflammatory biopsy is scarcely ever worth while unless the material is to be handled by a technician who specializes in dermatological work or is prepared at least to give more attention to the material than average conditions allow him to bestow on his routine necropsy specimens If such a technician is not available the next best thing is for the dermatologist to cut his own sections and indeed for the young dermatologist this is often the best way of learning histology But microtomy is just as much an art as painting or cooking and like these it depends almost entirely on imponderable qualities Just as the perfect omelet cooked to perfection by the apparently undirected efforts of the unlettered rustic maiden may well defy the utmost endeavour of the distinguished chemist though he be provided with the combined resources of an up to date kitchen and a well equipped laboratory so is the microtomist born to his trade and cannot be made The procedure itself is simple enough The sample is carried by stages from 70 per cent alcohol to absolute alcohol to remove all traces of water it is then immersed in xylol to wash out the alcohol and to prepare it for impregnation with paraffin wax Technique in the hands of the obsessional may be developed to the point of absurdity but usually without any favourable influence on the result

Many years ago the writer set himself the task of discovering the best method of preparing a paraffin block An elaborate experiment was planned by which he confidently hoped to be able to assess the effects of different fixatives long and short treatment with various dehydrating clearing and embedding media of paraffins of different melting points and at different temperatures The results not only refuted the whole accepted canon but they also contradicted each other and those of the 128 slides yielded by the experiment which had escaped gross under dehydration were all very much alike in thickness and staining quality Indeed although the writer fancies he is good enough to distinguish in the section between formol fixed and alcohol fixed material he would be much more confident that he could distinguish between slides prepared in the same way by different technicians of his acquaintance than between slides prepared in different ways by the same technician Moreover just as the chef can only excel himself for a discriminating client so must the technician—the microtomist—be the trusted and understanding friend of the histologist if the latter is to have any substantial chance of interpreting the slight and often equivocal signs in sections prepared from cutaneous lesions Thus since few if any general pathologists know enough about dermatology to understand or indeed care greatly for its histology biopsy tends to be useful only to the dermatologist who has made some study of the subject and who can also command the services of a suitable technician

It has often been objected against biopsy that it carries the risk of infection scarring or worst of all of losing the patient Of course biopsy must not be postponed until the patient has lost all confidence in the clinician s ability to make a diagnosis for then he will either refuse to have it done or betake himself elsewhere before the section is ready but the writer has rarely encountered a refusal when the operation has been proposed at the first consultation and surely it is at the first consultation that the need for help in diagnosis will be most strongly felt

Scarring may be avoided by care in selection of the site for biopsy the line of the incision and by clean surgery but when in doubt it should be remembered that the

face is the part of the body which is kindest to the dirty and unskilful surgeon The problem of sepsis should arise only when the biopsy has to be performed on a pyodermatic lesion *In the* course of a histological investigation of pyodermia the writer managed to escape any serious trouble by the injection of 250 000 units of penicillin 15 minutes before the biopsy and by filling the incision with sulphonamide powder before stitching it up

Only by experience can the clinician learn to recognize the problems capable of solution by biopsy, but a few general principles and illustrative examples should assist the reader to acquire this experience It should need very little imagination for example *to understand that biopsy will not distinguish* between an urticaria caused by eggs and one due to fish In fact histological sections of an urticarial weal normally show no changes at all obviously a transient lesion depending on functional changes in the vessel calibre and in the distribution of tissue fluids is much less likely to yield information than is a chronic one in which structural changes, if not *primary then secondary to disturbance of function, may* be present

Perhaps the most disappointing group of skin diseases is that in which the inexperienced might most naturally expect to obtain help namely the cutaneous metastases of visceral neoplasms It is possible that this is partly due to rarity of opportunity for breast tumours and naevo carcinoma—the two commonest—are not too difficult but biopsy of a cutaneous metastasis has not often helped to diagnose an obscure primary cancer The case of reticulo endotheliosis is no better Not only does the infiltrate in widely different conditions appear to have approximately the same unspecific character, but cutaneous tumours of the most menacing histological aspect may make a transitory appearance in persons otherwise perfectly *healthy* Here again the histology of myocosis fungoides *which is the commonest* reticulo endothelial disease encountered by the dermatologist seems to be not too obscure for a few experienced workers Nevertheless we must all go on trying and we should consider it our duty to neglect no opportunity of biopsy in this type of case

In any doubtful case of syphilis it is not a bad plan to make a biopsy at *the same* time as the blood is taken for a Wassermann reaction If the Wassermann reaction is negative and at the same time the section fails to show a tuberculoid granuloma then the serological finding can be accepted with greater confidence Indeed it is difficult to think of any case of this kind in which the information supplied by biopsy would be entirely superfluous The writer *will always remember* with mortification a case of his in which this was not done and in which the patient, who had a strongly positive and irreversible Wassermann reaction underwent a considerable amount of anti syphilitic treatment before the diagnosis of leprosy was *finally* made

Few, perhaps would think of making a biopsy as a routine *procedure to* distinguish between psoriasis and seborrhoeic dermatitis but this may in fact, be the only way of making the diagnosis without prolonged observation of the course of the disease

Before describing the technique of the operation we have first to decide who is going to perform it It is sincerely to be hoped that the bureaucrat*ization of* medicine will not lead to a monopoly in the use of sharp instruments by the surgeon,

and the dermatologist already forbidden from treating with x rays and radium the cutan ous neoplasms with which only he is thoroughly familiar prevented from performing his own minor surgery For one trouble with the surgeon is his pre occupation with what is left of the patient after the operation so that he may care very little about the material he has removed and is about to send to the pathologist

Now there is no generally accepted name for the piece of tissue removed at biopsy and since the difficulty of writing what follows will be greatly eased by the use of a convenient designation the writer proposes to call it the sample Let us see what fate awaits the sample after it has been thrown down on the tray with the instruments and swabs

(1) It may disappear down the sink during the process of washing off the clots of blood with which it will b_ covered (if the writer s technique is not adopted)

(2) It may be put into the wrong fixative or into normal saline solution or even worse into distilled water and entrusted to the chauffeur stew in the hot cubbyhol of the car for several days

(3) It may be forgotten and allowed to become dry

So far we have assumed that the op ration has been performed by a real surgeon and we were entitled to expect that a sharp knife was used But even so he may have removed such a large piece of skin that the lesion depending perhaps on hyperaemia for its visibility is now lost as far as the technician is concerned or he may have removed too small a sample and crushed it with the forceps in picking it up Supposing however it was not an experienced surgeon at all who took the sampl but the newly qualified house surgeon surely it is obvious that quite apart from the vitally important matter of selecting a suitable lesion or the char a teristic part of for example an ulcer the clinician responsible for the diagnosis must make the biopsy himself

If the dermatosis to be studied has more than one lesion or more than one kind of lesion the clinician may select one which appears to have attained a sufficient maturity of d velopment to b_ fully representative of the pathological process underlying it or he may select one having some resemblance to a condition it is desired to exclude for the purpose of differential diagnosis

Instruments and equipment

For the op ration of biopsy the writer recommends the following instruments and equipment

(1) A rubb r-capped bottle of local anaesthetic with a wide bored needle to pierce the cap or alternatively glass ampoules and a file

(2) A 2 millilitre Record syringe (unless biopsy of gums hard palate nail bed or other dense tissue is proposed when a dental syringe will be found more suitable)

(3) No 14 hypodermic needles

(4) Ophthalmic gut or similar nylon sutures capable of passing through the bore of a No 14 needle

(5) A biopsy clamp (see Fig 318) or sinus forceps and a rubber ring

(6) A Bard Parker scalpel with No 11 blade

(7) A Kilner hook (For larger samples Liston s artery forceps may be handier)

(8) A small bottle containing 70 per cent alcohol or other fixative

(9) A piece of blotting paper not too large to pass through the neck of the bottle described above

The purpose of the blotting paper is three fold (1) to absorb the blood on the under surface of the sample the presence of which in the finished section is a dis figurement (2) to act as a support for the sample to keep it flat and prevent it curling and (3) to indicate to the section cutter which is the epidermal surface of the sample

Needless to say there is no perfect fixative but for most purposes 70 per cent alcohol is satisfactory and Freudenthal (1947) states that tissue can be kept in it for a couple of weeks without getting too hard If staining for fat or lipoids is contem plated then 5 per cent formalin (and of course the freezing microtome) is indicated

Normally the haematoxylin and eosin staining method is the only one required—and indeed sometimes the only one available—but the author agrees with Freuden thal (1947) that the opportunity of using Unna Pappenheim should never be excluded by fixing in other than 70 per cent alcohol The Unna Pappenheim gives distinctive colour reactions with plasma cells and mast cells and is very useful in making visible slight changes in the collagen such as occur, for instance in granu loma annulare Foreign bodies though unstained show up very well and it is excellent for gram positive cocci It is perhaps the best cytological stain of all

THE OPERATION ITSELF

The skin is cleansed by swabbing with acetone A sufficient area of skin is infil trated with the local anaesthetic The line of the incision is chosen with reference to *the natural lines of cleavage (Langer s lines) The needle used for the local anaes* thetic is passed through the skin under the lesion to be excised and at right angles to this line A suture is passed through the needle The biopsy clamp is applied and closed

Everything is now set for the procedure of cutting out the sample required The operator is presented with a convex surface steadied by his left hand on the handle of the biopsy clamp and presenting a potentially bloodless field for his incision In the case of a lesion not more than about 1 centimetre in diameter the ideal sample is an oval piece of skin about 5 millimetres wide and long enough to include 3 millimetres of normal skin at each end *In the case of an ulcer the incision should* always begin in the floor of the ulcer in order to secure sufficient depth and be carried towards and beyond the edge at the same depth Samples from ulcers have a fatal tendency to consist only of a useless snippet from the free edge

The incision should be made with the point of the knife (*see* Fig 318) held so that the sample has vertical sides and is not V shaped in transverse section and a sample of skin must always include enough of the subcutaneous fat to ensure that the skin is represented in its entirety If it is desired to indicate the edge of a *lesion* or the position of some change in the texture of the skin which is not likely to be obvious in the finished section a *shallow cut through the horny* layer should be made before excising the sample and is enough to show up in *the section* without running the risk of having the sample become distorted in the fixative



FIG 318 —Showing biopsy clamp in position incision nearly completed Kilner hook ready to lift the sample and hypodermic needle threaded with nylon for the suture

We are now ready to excise the sample Holding the scalpel as shown in Fig 319 we make the necessary oval incision Then lifting the normal skin end of the sample by means of the Kilner hook we dissect away its under surface by cutting through the subcutaneous fat Having freed the sample we place it fat side down on the slip of blotting paper and drop it into the bottle of fixative

The next step is to remove the biopsy clamp and to wait a moment to be sure there is no important arterial bleeding Then pulling out the No 14 needle we are left with a deep suture all ready to tie In the majority of biopsies this one suture is enough but if the wound gapes additional sutures may be inserted by the same method Healing having taken place by first intention under an inconspicuous linear scab the stitch may be removed after an interval determined by the part of the body concerned For example the pinna is firmly united in 24 hours the face in 72 hours most other parts in 5 days but the neck upper arm and leg take 10 days An incision made along Langer s lines heals not only with less scarring but more quickly than one at right angles to the lines of cleavage

When the technique just described is found impracticable for example on the upper eyelid or inside the mouth an ear nose and throat surgeon s crocodile ring

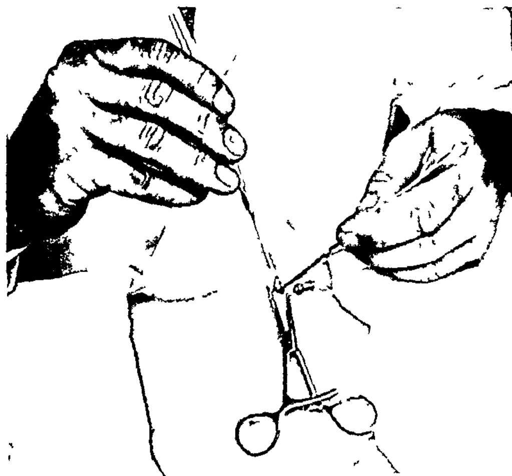


FIG 319 —The sample is being lifted by means of the Kilner hook and dissected away by cutting through the subcutaneous fob

forceps is very convenient the suture being passed with an ordinary needle beyond the ring before the jaws are closed

For the hard palate a sharp ring curette 5 millimetres in diameter with the ring set at 60 to the stem may be used to cut out a strip of tissue

Sometimes in connexion with some disease of the skin one needs a biopsy of lymphatic gland The writer himself prefers to depute the task to a surgeon but he offers the following hint to those who would like to try it themselves Unless the gland is a big one if it has not disappeared after infiltrating the skin with local anaesthetic it will certainly no longer be palpable after the incision is made He therefore suggests transfixing it before incising the skin with a curved needle threaded with a piece of silk The points of entry and exit of the needle are now joined by the incision in the skin and the needle is drawn through leaving the loop of silk as a guide to the position of the gland which is of course below the deep fascia

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CHAPTER 48

PHYSIOTHERAPY AND RADIOTHERAPY IN DERMATOLOGICAL CONDITIONS

R T BRAIN

PHYSIOTHERAPY

Carbon dioxide snow

MOST of the physical agents used in medicine have applications in dermatology Cold as a therapeutic agent is usually applied in the form of carbon dioxide snow conveniently prepared by the Sparklet apparatus but it is inadvisable to use a smaller carbon dioxide cylinder than size J for the production of the snow The powdered snow may be pressed into a firm pencil or mixed with a minimum amount of acetone to produce a slush which immediately freezes the skin The application of carbon dioxide snow for 20-60 seconds is a useful treatment for superficial birthmarks that is the pink capillary naevi and treatment may be repeated at intervals of 2 months for 3 or 4 applications A mild blister reaction should be aimed at the purplish port wine marks or the deep cavernous naevi should not be treated by this method A pencil of carbon dioxide snow is useful for destroying solitary warts It is applied firmly to the lesion for 1-3 minutes until a narrow zone of frozen snow surrounds the wart The subsequent blister reaction often enables the wart to be lifted out of its crater and the method can also be employed in the case of plantar warts

Galvano cautery

The galvano cautery is a simple and inexpensive appliance using a small transformer or accumulator to heat the platinum iridium point This fine cautery is excellent for destroying stellate naevi small warts and moles and for picking out gross telangiectases which often disfigure the cheeks of elderly patients A small diathermy machine may be very useful for minor surgical procedures but it is much more expensive and has little advantage in general practice over the galvano cautery Both can be used for destroying warts which may disappear after a few quick punctures with the hot point and the subsequent painting with liquid phenol

Electrolysis and ionization

Electrolysis and ionization are perhaps better reserved for special clinics and their application is mainly to a cosmetic disorder such as hirsuties

Radiant heat

Radiant heat is not much used in dermatology but it is a useful adjunct to the treatment of chilblains chronic ulcers boils and carbuncles Infra red irradiation is nothing more than the application of radiant heat and there is no need for an

expensive apparatus since any electrical element which becomes hot but not bright red is an efficient source of infra red irradiation

Ultra-violet light

Ultra violet light is now more generally available and some patients have their own apparatus Although the mercury vapour lamp which is the only efficient source of ultra violet light generated by low amperage is richer in short wave *ultra violet than natural sunlight the indications* are simply those for the latter so that mild erythema doses may be given daily or less frequently according to convenience is a stimulus to general metabolism and the healing of many chronic infections, especially tuberculosis of the skin is often assisted Cases of psoriasis, pityriasis rosea and molluscum contagiosum have sometimes dramatically improved after erythema doses of ultra *violet light In lupus vulgaris of course* irradiation both local and general must be intense and it is no doubt more economical and effective to give calciferol in adequate dosage for this disease *Local ultra violet light* is often given to areas of alopecia areata but this can be no more effective than any other method of counter irritation of the scalp and it is much better in this disease to give general ultra violet light therapy combined with local treatment For local therapy a Kromayer lamp is the most convenient and efficient apparatus but this is expensive and is not necessary in general practice *A useful application of ultra violet light is in the diagnosis of microsporon* infections of the scalp For this purpose a special electric light bulb may be purchased inexpensively which serves to detect by the greenish fluorescence of infected hairs the presence of an infection making the diagnosis and the response to therapy relatively simple matters An apparatus should be installed in every school clinic where ringworm infections are seen

RADIOTHERAPY

Radiotherapy includes all forms of atomic energy The *alpha* and *beta* particles the short waves of the electromagnetic spectrum represented by x rays, and the *gamma rays of radium* are all used in dermatology Practitioners and others who have had little practical experience in the use of these radiations remembering the unfortunate incidence of radiation dermatitis which followed the introduction of x ray therapy are naturally *inclined to* advise patients against such *treatment* This advice should be left to the specialist concerned who if reasonably competent is equally aware of the dangers of radiotherapy but also knows how to use these potent forces for the good of his patient As will be pointed out presently some forms of irradiation are relatively safe whilst others in appropriate dosage have *been used* without ill effect in countless cases It is advisable, therefore that the practitioner does not prejudice a patient against the use of radiotherapy by discussing the potential dangers of these therapeutic agents

Thorium X

The *alpha* particles are nuclei of helium and have velocities of from 9 000 to 20 000 miles per second Being unable to penetrate a sheet of paper their effects are limited to the upper layers of the epidermis The vessels and the complex supporting structures *of the dermis therefore* escape and it is very difficult to produce

atrophic or degenerative changes in the skin with these atomic projectiles The usual source of *alpha* rays is a solution of thorium X in either alcohol or varnish For the practitioner the latter is probably the most convenient agent to use and this may be obtained in a strength of 2 000 electrostatic units per millilitre At pr sent 1 millilitre costs 13s 6d and because of its natural decay (losing half of its energy in just under four days) it is important to state the day of delivery on the order Thorium X varnish is much used for the treatment of the capillary haemangiomas and many of the paler vascular naevi are improved by monthly paintings with this varnish. To assist penetration the skin should be well cleansed with ether and alcohol before applying the varnish to the discoloured naevus and the varnish should be left undisturbed on the skin for at least 10 days after which the energy in the residue is almost negligible From 10 to 20 monthly paintings may be given and if obvious improvement is not noted then it is unlikely that the naevus will respond although there is often a slow fading over the subsequent years The deep dark port wine marks are very resistant to any form of treatment and one can rarely produce more than a pale bloom on the purple surface with thorium X A moderate redness and sometimes slight blistering or exfoliation usually occurs within 24-48 hours of the painting This mild inflammation soon subsides and on pale skin some pigmentation may result Because the action of thorium X is so superficial it should not be used on the deep vascular naevi most of which tend to spontaneous disappearance This natural resolution may be accelerated by cautious radiotherapy but patients should be referred to a dermatologist for this treatment Thorium X varnish is sometimes effective as an occasional paint to a persistent area of psoriasis It is also beneficial in many cases of lichen simplex or neurodermatitis but it is probably of little value for anything else

Beta ray therapy

This is a more penetrating type of irradiation and the common source of this form of energy is a lightly screened radium plate Cautious treatment with radium plates is of value in the darker coloured capillary naevi and some deeper varieties, such as the strawberry mark and it is also a very convenient method of dealing with superficial rodent ulcers of small size It is obvious that such treatment should be left to the expert

X rays and gamma rays

X rays and the *gamma* rays of radium are the most penetrating of all varieties of radiation and because of this the risk of producing atrophic changes in the dermis is considerable unless dosage is accurately measured and techniques established by long experience are employed With this reservation superficial x ray therapy is of the greatest service in dermatology especially if incorporated in a therapeutic plan These rays probably act by producing ionization in the tissues and as a result of this localized chemical changes occur which affect the molecular structure or the enzymotic or biophysical properties of the cell Thus it is possible with large doses to inhibit cellular metabolism and especially nuclear division and for this reason x rays and *gamma* rays are used in the treatment of malignant disease

Consideration of the physical effects of irradiation inclines one to the conviction that at the minute focal points of absorption of these rays some damage to the cells

must occur probably with the liberation of histamine This may account for the mild erythema that is the first visible response to moderate irradiation but which is rarely seen after small doses of x rays It would appear that tissues are stimulated by these small doses because many chronic localized dermatoses are improved and irritation is relieved by mild x ray therapy The dose of x rays is measured in roentgen units and 400 r at a kilovoltage of 70 may be taken as the threshold erythema dose This dose is used safely for the temporary epilation of the scalp in children with ringworm, and innumerable cases have now been treated by this method without permanent ill effects either upon the hair the scalp or the brain beneath However it is an exacting technique and should be reserved for the dermatologist or radiotherapist who is well experienced Dermatologists and radio therapists are not without some little anxiety when conducting x ray epilation and some work has been done with modern fungicides and penetrating bases which offer about a 75 per cent chance of the successful treatment of ringworm of the scalp within a period of 2 months without the use of x rays

X rays and the *gamma* rays of radium are perhaps most rationally used in large doses for the treatment of malignant lesions of the skin but in smaller doses they are effective in the treatment of warts To avoid using large doses on benign lesions the dermatologist makes use of some form of cauterization or curettage before giving a moderate dose of x rays and this is probably the safer course Smaller doses of x rays from 100 to 150 r may be safely given to cases of resistant acne and without risk doses of this order may be repeated every 2 or 3 weeks on 3 or 4 occasions, after which intervals of from 3 to 6 months should elapse before any further irradiation is given Even smaller doses often relieve local irritation of the skin and may dramatically relieve the pain and tension in boils and carbuncles

More might be said about the application of radiotherapy to dermatology but the practitioner will be well advised to leave the indications and dosage and indeed the entire responsibility for radiotherapy to the expert

CHAPTER 49

THE PHARMACEUTICAL ASPECT

M H PAYNE

INTRODUCTION

WITH the exception of penicillin and the sulphonamides and perhaps some fungicides the practice of dermatology cannot be said to have received much help over the last decade by the introduction of new drugs to its armamentarium Coal tar calamine salicylic acid phenol resorcinol and the salts of copper mercury zinc and lead are as much in vogue today as they were many years ago Moreover some of the newer drugs although useful lack that degree of specificity which we can attribute to remedies in other branches of medicine and the clinician is still faced much too often with the intractable skin condition All of which would present a gloomy picture were it not for the immense improvements recently made in the manner in which the available drugs can be presented for use Scientists in the laboratory and the pharmaceutical industry generally have devoted a great amount of effort to the study of new ointment bases and creams their mode of action and their relative efficiency when used on the various conditions of the patient s skin The effectiveness of most drugs has been much enhanced by these developments and the clinician is well advised to attach almost as much importance to the choice of vehicle for his remedy as to the choice of the remedy itself It is for this reason largely that a chapter on the subject has been included

No attempt has been made to provide a complete formulary including the older and well known prescriptions but rather has the subject been treated on broad lines indicative of modern practice Interesting new formulae are given and some reference to proprietary remedies is made as it is felt that many of the latter will commend themselves for convenience in prescribing

OINTMENT BASES

Soft paraffin although still very useful as an emollient ingredient is being used less and less as a base *per se* Its poor absorbability its inability to mix or emulsify with skin secretions the insulation of active ingredients and its unpleasant greasiness all detract from its use It is safe to say that no one ointment base will fulfil all desiderata because its composition must vary with the skin condition presented The main points to consider in an ointment base may be briefly classified as follows

(1) It must be non irritant but rather emollient

(2) Its degree of skin penetration is important

(3) It must counter the physical abnormality of the condition as well as providing the medium for the curative ingredients (for example the condition may call for a greasy or a non greasy base)

must occur probably with the liberation of histamine This may account for the mild erythema that is the first visible response to moderate irradiation but which is rarely seen after small doses of x rays *It would appear that tissues are stimulated* by these small doses because many chronic localized dermatoses are improved and irritation is relieved by mild x ray therapy The dose of x rays is measured in roentgen units and 400 r at a kilovoltage of 70 may be taken as the threshold erythema dose This dose is used safely for the temporary epilation of the scalp in children with ringworm, and innumerable cases have now been treated by this method without permanent ill effects either upon the hair the scalp or the brain beneath However it is an exacting technique and should be reserved for the dermatologist or radiotherapist who is well experienced Dermatologists and radiotherapists are not without some little anxiety when conducting x ray epilation and some work has been done with modern fungicides and penetrating bases which offer about a 75 per cent chance of the successful treatment of ringworm of the scalp within a period of 2 months without the use of x rays

X rays and the *gamma* rays of radium are perhaps most rationally used in large doses for the treatment of malignant lesions of the skin but in smaller doses they are effective in the treatment of warts To avoid using large doses on benign lesions the dermatologist makes use of some form of cauterization or curettage before giving a moderate dose of x rays and this is probably the safer course Smaller doses of x rays from 100 to 150 r may be safely given to cases of resistant acne and without risk doses of this order may be repeated every 2 or 3 weeks on 3 or 4 occasions after which intervals of from 3 to 6 months should elapse before any further irradiation is given Even smaller doses often relieve local irritation of the skin and may dramatically relieve the pain and tension in boils and carbuncles

More might be said about the application of radiotherapy to dermatology but the practitioner will be well advised to leave the indications and dosage and indeed the entire responsibility for radiotherapy to the expert

TABLE

OFFICIAL OINTMENT BASES COMPARED

Base	Constituents	Physical Properties	Clinical Uses
Adeps Lanae (anhydrous lanoline Wool fat)	Animal fat containing cholesterol	Greasy with good penetration emulsifies with water	Too greasy alone for general use but excellent emollient and adhesive for pruritus ani and pruritus vulvae
Paraffin Molle (soft paraffin similar to Vaseline)	Hydrocarbons	Greasy with poor penetration non washable white or yellow	A poor base alone except as mitigant for powerful drugs such as dithranol Useful emollient in other bases
Unguentum Alcohol Lanae (Ointment of wool alcohols similar to Eucerin (Anhydrous))	Wool alcohols hard soft and liquid paraffins	Greasy emulsifies with skin secretions and water washable	Preferable to soft paraffin for dry conditions generally
Unguentum Aquosum (hydrous ointment)	Ointment of wool alcohols with equal quantity of water	White cream with good penetration washable	Cooling in neurodermatoses and inflammatory conditions
Unguentum Emulsificans (emulsifying ointment similar to HEB Simplex)	Emulsifying wax soft and liquid paraffins	Greasy emulsifies with skin secretions and with water good penetration washable	Excellent for scalp ointments removes incrustations also for general use in non inflammatory conditions
Unguentum Emulsificans Aquosum (hydrous emulsifying ointment)	Emulsifying ointment with water and chlorocresol	White creamy base rather thin non greasy washable	Typical of the new emulsion base cooling enhances action of many drugs for example fungicides
Unguentum Paraffin (paraffin ointment)	Beeswax hard and soft paraffins	Stiff greasy base poor penetration non washable	Base for water proof protective ointments for example Unguentum Acidi Borici
Unguentum Simplex	Soft and hard paraffins wool fat	Stiff greasy base non washable	Emollient but inferior to Unguentum Alcoholium Lanae

(4) Its suitability for use on the particular site must be assured (for example scalp ointments must be easily washed from the hair)

(5) It must be chosen with due regard to the chemical and physical properties of the drugs to be incorporated (for example the amount of liquids to be added)

None of the ointment bases in common use can be regarded as essentially irritant individual idiosyncrasy and incorrect choice being the chief causes of reaction It must not be forgotten however, that animal fats like lard and lanoline can become rancid and that some skins will resent such change of *p*H The emolliency of bases is nearly always achieved by the inclusion of a proportion of liquid paraffin soft paraffin or wool fat even in the so called non greasy types Glycerin also can be a useful addition and a completely grease free base using it will be described

Regarding the relative degrees of penetration of the various bases little satisfactory work has been done to demonstrate these It is assumed for instance that a well penetrating base will carry the medicament along with it, whereas the intrinsic absorbable power of the drug itself may be the more important factor It is logical to assume however that when the active principle is actually dissolved in one of the phases of an emulsified base (such as penicillin in the cream) then maximum efficiency is attained It has always been accepted that wool fat and lard are good penetrants and that the paraffins which do not emulsify with skin secretions are the worst The penetrative power of soft paraffin and indeed of most fats and greases can be increased by emulsifying them with a suitable agent

The penetrative powers of bases may be improved by the inclusion of surface active agents which reduce surface tension at the inter face of the skin and ointment These include sodium lauryl sulphate phenazone the range of Crills and the quaternary ammonium compounds of which the best known is cetyl trimethyl ammonium bromide (CTAB Cetavlon) Sodium lauryl sulphate is an ingredient in the official Emulsifying Wax (*B P* 1948) so that the two bases Emulsifying Ointment (*B P*) and Hydrous Emulsifying Ointment (*B P*) already contain a small amount Phenazone because of its scarcity in Great Britain and high cost has mostly been used in America The Crills are similar to the American Spans and Tweens and are mostly esters of sorbitol anhydride or propylene glycol Cetyl trimethyl ammonium bromide is also a detergent and bactericide and may be added to some ointments in a strength of 1 per cent

Emulsifiable and emulsified bases

It was Mumford (1938) who introduced the new type of base (HEB or Halden s Emulsifying Base) It consists approximately of the following

Liquid Paraffin – – – – – –	3
Soft Paraffin – – – – – –	2
Lanette Wax SX – – – – –	2

It will be seen that this is anhydrous and only becomes an emulsion on the addition of water of which it will take up to twice its own weight The *Pharmacopoeia of the United States* thirteenth revision has a similar formula well called hydrophilic ointment while the *British Pharmacopoeia* 1948 has introduced emulsifying ointment with the same ingredients as above This is a dual purpose base Alone it is greasy (though washable) and capable of good penetration with water

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(about 66 per cent) it gives Hydrous Emulsifying Ointment (*B P*) This latter is seemingly nongreasy and is a better heat radiant in inflammatory conditions Such aqueous bases are capable of growing bacteria and moulds and should contain a bactericide (such as chlorocresol 0 1 per cent) Further, they should be packed in air tight containers as they harden with loss of water

This new type of base has the advantages over older types of good penetration miscibility with normal skin secretions and pathological exudates and it is practically nongreasy and will wash off with ease

The emulsifying waxes are usually mixtures of the higher alcohols cetyl and stearyl sometimes sulphated or phosphated In addition to the official wax there are many excellent proprietary brands available (Lanette Wax SX Tenapol I and Polawax)

Ointment of Wool Alcohols (*B P*) (anhydrous and greasy) and Hydrous Ointment (*B P*) (50 per cent water) are analogous to the foregoing ointments but utilize the saponifiable fraction of wool fat in place of synthetic wax There is little to choose between the two types Some idiosyncrasy has been noted (rarely) towards emulsifying waxes, but this is not likely to arise with the wool alcohol type and it is safe to say that the latter (anhydrous) may with advantage be substituted in many ointments for soft paraffin For some years this product has been known as Eucerin (anhydrous)

For the busy practitioner an excellent range of dermatological creams made with emulsified bases are now marketed

OINTMENTS MADE WITH NEW TYPE BASES

In the following formulae when a hydrous base is used the official Hydrous Emulsifying Ointment (*B P*) has been excluded It has been thought unwise to include a base the physical properties of which (it is rather thin) have not yet been fully experienced

At one of the London hospitals there has been used for some years a similar base with somewhat more body and it has proved compatible with most medicaments It has been known as Lanette Emulsified Base and for convenience L E B Its formula is

Lanette Wax SX (Tenapol I Polawax) – –	15 0
White Soft Paraffin – – – – –	15 0
Chlorocresol – – – – –	0 1
Distilled Water to – – – –	100 0

Coal tar ointments

The unpleasant properties of crude coal tar may be mitigated by using the following washable ointment

Washed Coal Tar – – –	10 0
Zinc Anhydrous Wool Fat – –	10 0
Lime Water – – – –	70 0
Emulsifying Ointment (*B P*) to – – –	100 0

An example of the zinc and tar paste so widely used in eczema psoriasis and other neurodermatoses is

Solution of Coal Tar	10 0
Zinc Oxide	25 0
Starch	25 0
Liquid Paraffin	10 0
Ointment of Wool Alcohols (*B P*) to	100 0

The irritant bituminous fraction of tar can be avoided by using a reconstituted tar made from the pure chemical constituents Such a preparation is Colourless Tar Cream 5 per cent An alternative is a colourless paste of the ether soluble fraction of coal tar known as E S T P

Siccolam might be mentioned here although it contains no tar This is a most useful fat free paste containing zinc oxide titanium dioxide and kaolin and is indicated in exudative and pruritic conditions

Fungicidal ointments

Preparations for the treatment of fungus diseases are eminently suited to an emulsified hydrous base The inhibiting action of grease on the ingredients of Whitfield s ointment is avoided in this modified formula

Salicylic Acid	3 0
Benzoic Acid	5 0
L E B to	100 0

In America recent work has shown that the salts of some fatty acids are fungicidal particularly the propionates and undecylenates Copper undecylenate is probably the most effective and Axon (1947) suggests the following

Bentonite	2 0
Lanette Wax SX	5 0
Liquid Paraffin	25 0
Hard Paraffin	3 0
Copper Undecylenate	5 0
Water to	100 0

Bentonite is a colloidal hydrated aluminium silicate used as a stabilizing gel The undecylenate is insoluble in water and must be dissolved by heat in the paraffin phase before emulsifying

Phenylmercuric nitrate (or acetate) has proved a useful fungicide (Mersagel) The application of the latest knowledge of *wetting and penetrating* agents has enhanced its effectiveness and in a comprehensive investigation made by Brain and his colleagues (1948) the most active formula for treating tinea tonsurans was

Phenylmercuric nitrate	0 5
Cirll No 6	10 0
Solution of Citric Acid (2 per cent) and Sodium Propionate (1 per cent)	2 0
Carbowax 1500 to	100 0

Carbowax 1500 is an unctuous penetrative base of the polyethylene glycol series It is a good solvent (for example sulphathiazole will dissolve in it) and yet it is itself

water soluble it is one more substitute for soft paraffin without the latter's disadvantages The same workers describe a similar ointment for the same purpose, but using 5 per cent salicylanilide in place of the mercury salt

A useful proprietary for mycotic skin infections uses sodium ethylmercuri thiosalicylate in a washable base (Merthiolate Cream)

Scalp ointments

For use on the scalp the older bases have been out moded by the new washable ones For seborrhoea and psoriasis of the scalp a good ointment is

Oil of Cade	6 0
Precipitated Sulphur	3 0
Salicylic Acid	2 0
Emulsifying Ointment (*B P*) to	100 0

Acne vulgaris

A modern version of a sulphur ointment can be made as follows

Precipitated Sulphur	2 0
Resorcinol	1 0
Salicylic Acid	1 0
L E B to	100 0

Streptococcal and staphylococcal infections

Penicillin and the sulphonamides are widely used in sycosis barbae impetigo and erysipelas In the writer's hospital a completely grease free cream has been used for these chemotherapeutic agents good emolliency and penetration being achieved by including glycerin The sulphathiazole cream is

Sulphathiazole	5 0
Lanette Wax SX	15 0
Glycerin	7 0
Chlorocresol	0 1
Distilled Water to	100 0

For Cremor Penicillini (*B P*) this base (sterilized) has been preferred to the official formula containing the paraffins

Sunburn

For cosmetic reasons (for example in sunburn creams) a vanishing cream base containing no grease and leaving a matt surface may be preferred The formula recommended is that of Ruggles (1935) modified for ingredients readily obtainable here

Stearic Acid	7 5
Potassium Carbonate	1 5
Borax	0 5
Methyl Cellulose (Tylose 450)	0 4
Glycerin of Starch	40 0
Distilled Water to	100 0

Special pharmaceutical skill is required in making this type of base, full directions have been d scribed (Editorial 1936) An excellent protection against sunburn is provided by the following cream of Rothman and Hemingsen (1947)

Para aminobenzoic Acid – – – –	15 0
Vanishing Cream Base (Ruggles) to – –	100 0

Pruritus

Local analgesia and relief may be obtained by adding 2 per cent amethocaine hydrochloride (D cicain) to the ointment preferably a hydrous one Another local anaesthetic cinchocaine (base) well known as Nupercaine may be used in a strength of 1 per cent in a greasy base A useful formula suitable in most cases but especially in pruritus ani and pruritus vulvae is

Cinchocaine (base) – – – – –	1 0
Solution of Aluminium Acetate (*B P C*)– –	5 0
Liquid Extra t of Hamamelidis – –	5 0
Ointment of Wool Alcohols to – – –	100 0

BARRIER CREAMS

The prevention of industrial dermatitis has received quite a lot of attention from the authorities and a number of so-called barrier creams have been devised These creams fill th skin follicles with a washable emollient and help to protect the worker from the ravages of degreasers and the effects of constant immersion of the hand in water HEB Protective is made for dry handling of skin irritants and this leaves the hands free from excessive grease HEB Protective Water proof contains a proportion of lanoline to counter the effects of wet operations Similar formulae may be made up as follows

For dry operations

Lanette Wax SX – – – – –	15 0
Soft Paraffin – – – – – –	10 0
Water to – – – – – – –	100 0

For wet operations

Lanette Wax SX – – – – –	10 0
Soft Paraffin – – – – –	10 0
Anhydrous Wool Fat – – –	10 0
Water to – – – – – –	100 0

LOTIONS

Improvements made in lotion formulae are not comparable with those made in ointments We still have to rely largely on calamine lotion and oily calamine lotion with or without adjuvants for the majority of dermatoses It should be remembered that oily calamine lotion is an emulsion of lime water with oil and that soluble salts of the heavy metals may throw the phases out The following scheme of calamine lotions shows compatibilities and will cover a large range of skin conditions

Calamine Lotion with	Menthol ? per cent	with Oily Calamine Lotion
	Precipitated Sulphur 2 per cent	
	Solution of Coal Tar 2 per cent	
	Phenol 2 per cent	
	Gentian Violet 2 per cent	
	Strong Solution of Lead Subacetate 1 per cent	
	Perchloride of Mercury 0 1 per cent	

Scalp Lotions

For seborrhoea of the scalp, with encrustation a spirit lotion with salicylic acid as keratolytic is indicated

Ingredient	Quantity
Perchloride of Mercury	0.1
Salicylic Acid	2.0
Castor Oil	2.0
Industrial Methylated Spirit	70.0
Distilled Water to	100.0

In less severe cases with only mild dandruff, all that should be required is a simple aqueous lotion

Ingredient	Quantity
Perchloride of Mercury	0.1
Glycerin	5.0
Distilled Water to	100.0

It is important to use distilled water in lotions containing mercury salts as some tap waters *precipitate the active ingredient and render the lotion useless*

Acne vulgaris

An astringent lotion exhibiting *zinc sulphide in a nascent form* is possible using two solutions

Lotion A

Ingredient	Quantity
Zinc Sulphate	12.5
Distilled Water to	100.0

Lotion B

Ingredient	Quantity
Sulphurated Potash	12.5
Distilled Water to	100.0

The patient is instructed to mix equal quantities (enough for a single application) of the solutions and apply at once

Cleansing lotions

In addition to using oil the removal of ointments from the skin may be effected by using a 1 per cent solution of CTAB (Cetavlon) This is also useful for degreasing over fatty skins An alternative cleansing lotion which emulsifies superfluous skin fat can be made as follows

Ingredient	Quantity
Emulsifying Wax	5.0
Distilled Water to	100.0

SHAMPOOS

Most treatments for scalp diseases include the use of a suitable shampoo once or twice each week A good detergent formula is

Ingredient	Quantity
Soft Soap	50.0
Solution of Coal Tar	10.0
Industrial Methylated Spirit to	*100.0*

When soap is contra indicated an alternative soapless shampoo is very useful

Ingredient	Quantity
Sulphonated Lorol Liquid TA (Ronsheim and Moore)	25.0
Oil of Lavender	0.2
Distilled Water to	100.0

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CHAPTER 50

SOCIAL ASPECTS OF DERMATOLOGY

M FEIWEL

CHANGING NATURE OF PREVALENT SKIN DISEASES

SKIN DISEASES are common It is estimated that over 10 per cent of the general practitioner s cases are dermatological and it is well worth acquiring skill in their diagnosis and treatment Skin disease is visible and doctor and patient can both observe progress directly and derive pleasure from good results

Changing social conditions and advances in medical knowledge and care are altering the nature of the prevalent skin diseases, so that the doctor today will rarely encounter some such as cutaneous tertiary syphilis or lupus vulgaris which were still common a generation or so ago and not at all others such as leprosy, which were common a few centuries ago (unless he lives in a country where leprosy is endemic)

The onset of World War II revealed that infestation with lice was still far too common especially among the children in the poorer quarters of the large towns When these children were evacuated into country districts this infestation came as a great shock to their country hosts In 1944 one out of three entrants to the A T S had pediculosis capitis

There was an enormous amount of scabies during the war Scabies is always a companion of armies but in addition the peculiar circumstances affecting the civil population, the shelter life evacuation and overcrowding contributed to the spread

Social pressure and military necessity demanded a heavy onslaught on the parasitic infestations The employment of agents such as D D T Lethane and benzyl benzoate has given good results so that today the general cleanliness of the children has increased while the incidence of scabies has fallen in a remarkable manner As a result of the diminished infestation there is less secondary infection of the skin with pyogenic cocci less impetigo ecthyma and pyodermia With the low incidence of pediculosis among the troops during the war we were spared epidemics of serious louse borne diseases such as typhus and trench fever

Ringworm of the scalp has also diminished in a remarkable manner While the number of x ray epilations that had to be performed at a large hospital such as the London Hospital a few decades ago were in their thousands the figure is nothing like that now Better hygiene medical treatment the use of Wood s glass to detect the fluorescent hairs and the patient work of the school nurses have all contributed to this happy result The problem is not entirely solved the past years have still seen epidemics involving some hundreds of cases in different parts of the country while from the United States of America epidemics involving thousands of school children have been reported

These advances however are one side of the picture During World War II large numbers of people were brought into occupations to which they were un accustomed and in which they had to handle substances they had never previously encountered There was a sharp rise in cases of industrial dermatitis

Those in the services had to adjust themselves to difficult conditions Almost every family suffered separation of some of its members often for many years Civilians encountered heavy bombing raids These were some of the impacts of World War II on the lives of nearly all and some of the aftermath is with us still— housing shortages persisting rationing and control financial hardship and queues The influence of such adverse social factors has led to an absolute increase in the incidence of skin diseases as in diseases in the other branches of medicine which are dependent upon stress and strain

No doubt the changes of the future will bring fresh cutaneous hazards

SOCIAL CONSEQUENCE OF SKIN DISEASE

Skin disease is a great barrier to social life Misconceptions about infection and contagion are rife among the general public Patients often have to be taken off work or children excluded from school not because there is any danger in con tinuing there but because of the feelings engendered in the others On that account the leper complex of the patient with a skin disorder is still a reality today Many such patients are unduly sensitive A young girl with a mild acne will avoid parties and dances and then the adverse psychological effect of lack of social intercourse will make the acne worse

Many skin diseases affect the exposed parts Although the patient s general health may be good one cannot minimize the misfortune of those who have serious blemishes of the face The recent advances in the treatment of lupus vulgaris with calciferol have been gratifying on that account Lupus vulgaris presented a serious social problem The face is commonly affected If there is erosion of the nasal cartilages a peculiar beak like deformity of the nose results Feelings of revulsion in the onlooker are unavoidable The treatment of lupus vulgaris prior to the use of calciferol necessitated frequent attendance at a clinic for intensive heliotherapy Many patients felt unequal to the effort demanded of them in exposing themselves on the journey to and from treatment and would not attend preferring the seclusion of their homes The disease would then spread causing further deformity Today visits to hospital for supervision of calciferol therapy are less frequent and on that account less exacting to the patient

Another not uncommon blemish which affects the face is the capillary haeman gioma the naevus flammeus or port wine stain For this as yet there is no entirely satisfactory treatment But there is no reason why the patient should not disguise it with a simple cosmetic such as Covermark (Lydia O Leary New York)

One of the problems a doctor has to face is that patients who are already awkward and uneasy in their social contacts and relationships readily develop dermatoses which in their turn aggravate their social handicaps Sometimes there is a simple answer For example a wig may restore the appearance of a patient afflicted with severe alopecia On the other hand when remedies are less certain

as with rosacea acne or seborrhoeic dermatitis, one must nevertheless endeavour to encourage the patients to persevere in the company of their fellows It is of value for young people with acne to be members of youth clubs or similar organizations

On the whole the public today are much less unkind to the patients suffering from skin disease One factor in this change may be that with lessened incidence of cutaneous syphilis, rashes are no longer associated in the public mind with venereal disease The separation of dermatology and venereology, although no doubt regrettable from the dermatologist s point of view in that it has deprived him of treating that interesting disease syphilis and perhaps from the student s point of view in making him see even less syphilis in the skin departments undoubtedly has been of great value to the patient who can now attend the dermatologist without the faintest suggestion of the stigma of venereal disease It is worth while reminding ourselves that though less common syphilis is still with us and that it is wise never to let our acuity of suspicion sink too low and miss that most treatable skin disease

EDUCATION OF THE PUBLIC

The education of the public in dermatological matters is important There has been an excellent series broadcast by the B B C under the title of Skin Troubles Other media of instruction for example films or lectures might well be used Publicity by means of posters is already used in industry in the prevention of dermatitis With greater knowledge and understanding by his patients the doctor will be presented with disease in its early most treatable stage and will be able to do much more towards prevention

SELF TREATMENT

Today it is high time the public were discouraged from attempting to treat their own skin troubles by means of healing balms and proprietary ointments These usually contain substances introduced for the purpose of relieving irritation which are sensitizers and commonly produce a dermatitis medicamentosa and an exacerbation of the lesion they were intended to cure

Of course, one would not suggest that every household should not contain a little calamine lotion to be used say in the first aid treatment of sunburn or even of heat spots and that the public should seek the busy doctor with every dermatological triviality On the other hand the initial dermatological diagnosis is important The doctor should be given the first opportunity in treatment

COSMETICS

Cosmetics widely employed in times of antiquity are now an integral part of the lives of all civilized communities and of all classes They enhance personal appearance and attractiveness correct minor blemishes (real or often imagined as the result of clever advertising) and reduce the effect of work sun wind and sweat upon the skin Cosmetics are a branch of applied dermatology Only very occasionally does their use produce a dermatosis (*see* Chapter 7) It may be of value briefly to illustrate the principles of some common cosmetics

Face and hand creams

Face and hand creams are usually oil in water or water in oil emulsions of varying composition Their oil content is emollient the water cooling A simple cold cream formula consists of mineral oil beeswax borax and water and is an emulsion of mineral oil with the partially saponified bees wax acting as the dispersing agent For dry skin a superfatted cream enriched by vegetable oil or lanoline and its derivatives is useful Vanishing creams are so constituted that on application no excess of grease is visible on the skin In a cleansing cream the melting point of the fat is below that of the skin and the fat becomes liquid on the surface of the skin

Permanent waving

First the hair is shampooed to remove oily matter it is then rinsed with water and an alkaline solution is applied This softens the keratin layer Strands of hair are taken up tightly wound around curling rods protected by an absorbent strip of cloth and aluminium foil and then steamed After a suitable period the apparatus is removed the hair usually re shampooed and the coiffure arranged to the individual taste

Cold waving is now becoming popular because it is cheaper than permanent waving Solutions of chemicals such as thioglycolates are used to soften the hair so that it loses its elasticity and can take the curl

Lipstick

A lipstick is made up of a blend of vegetable oils such as castor oil fats such as cocoa butter waxes perfumes and colouring matter It is hard enough not to melt under normal temperatures and yet will soften sufficiently when applied to the lips Lipstick is useful to prevent the cracking and chapping of lips caused by the wind sun and cold

Face powder

A typical face powder contains calcium or magnesium carbonate talc or kaolin magnesium or zinc stearate titanium or zinc oxide The stearates adhere the talc gives good slip and the titanium oxide assists good covering There is also colouring matter and perfume

THE NATIONAL HEALTH SERVICE

The increasing care and responsibility which society has assumed for its sick has culminated in the United Kingdom in those Acts which are to give complete social security The National Health Service Act the National Insurance Act and the National Insurance (Industrial Injuries) Act are now law

Care of public health prior to formation of the National Health Service

The dermatological health of the community before July 5 1948 was cared for as follows

Social

The medical officers of health and their staffs were mostly engaged in prevention by improving housing and sanitation, combating infestation and controlling infectious disease They provided treatment centres for scabies The Public Health authorities also manned the fever hospitals

Industrial

The Home Office was responsible for inspection of factories and for the maintenance of the standards laid down by the Factories Acts Certain industrial skin diseases, such as anthrax chrome ulceration epitheliomas from tar pitch and so on were compulsorily notifiable to the Chief Inspector of Factories

During World War II the Ministry of Labour and National Service became increasingly concerned with the health and welfare of the worker and the problem of industrial dermatitis engaged much of its attention The Ministry of Labour has taken over from the Home Office the obligations of the latter under the Factories Acts

An industrial medical service was also growing rapidly enabling industry to provide medical care of the workman at his job and to concentrate on the control of industrial and occupational disease on the spot

The industrial medical service was manned by full time and part time medical officers It has not been taken over by the National Health Service Today the industrial medical service still covers only a portion of industry It is mainly the large firms and concerns which have a doctor, not those that employ less than a hundred hands which concerns form the bulk of our industry

Children

Children often received their first medical attention at the infant welfare centres In elementary schools the education authority assumed responsibility the children being examined by the school medical officers and nurses Many of their skin troubles such as impetigo would receive treatment at the schools minor ailment clinics or if more complex such as cases of ringworm of the scalp, when x ray epilation was required would be passed on to hospital for treatment

General

Diagnosis and treatment of established disease rested on the general practitioners and on specialists and the hospitals

The nursing of the sick in their homes was mostly performed by the district nurses who were salaried officers of the local nursing associations which were voluntary organizations Alternatively private nurses could be engaged

Out patient facilities for dermatological consultation were concentrated mainly in the voluntary hospitals large departments especially being associated with the teaching hospitals

The National Health Insurance provided the insured person with a cash allowance during his incapacity The non insured portion of the population unless they had insured themselves privately, would have to bear the cost of their illness themselves

The Workmen s Compensation Act 1925 covered accident and illness at work A workman was entitled to compensation from his employer on account of a skin affection when this was caused as a personal injury through an accident for example by cuts abrasions or burns from heat cold electricity or chemicals or when this was an industrial disease The workman would have to prove by means of a certificate from the certifying factory surgeon (examining surgeon) that he was suffering from a sch duled industrial disease for instance dermatitis produced by dust or liquids

Care of public health at the present time

The National Health Service Act introduces changes in the organization of the medical services which as far as dermatology is concerned mainly affect those agencies engaged in treatment of disease

Social

Every member of the public is entitled to sign on with a general practitioner of his choice (providing the practitioner will accept him) and as a result to come under his medical care and to receive drugs medicines and dressings—all free or for a nominal fee

Hospital and specialist services covering in patient and out patient treatment and the advice and treatment of specialists when necessary in the patient s home are all available It is also proposed to set up new publicly equipped health centres from which general practitioners will work and to which if necessary specialists can be called

The scope of health visiting and home nursing is to be widened It is made the duty of the local health authority to provide a home nursing service for those who need nursing in their own homes and to provide domestic help to any household in which it is needed on grounds of ill health

Under the new legislation the National Insurance Scheme takes the place of Unemployment Insurance National Health and Contributory Pensions Schemes and the Workmen s Compensation Act and also widens the scope of insurance to cover everyone over school leaving age living in Great Britain All contributors are entitled to sickness benefit when they are incapacitated for work A medical certi ficate is obtained from the doctor and is supplied to the local National Insurn e Office when payment of sickness benefit will be made

Industrial

The National Insurance (Industrial Injuries) Act 1946 has taken the place of the Workmen s Compensation Act and like the latter covers accidents at work and industrial disease

The responsibility for payment is no longer with the employer but with the Ministry of National Insurance

An accident at work or an industrial disease resulting in incapacity entitles the workman to benefit which is known as injury benefit It is larger in amount than

sickness benefit—45 shillings per week (apart from any increase for dependants) as compared with 26 shillings per week sickness benefit

Prescribed diseases

The industrial diseases for which injury benefit is paid are now called prescribed diseases

The list of prescribed diseases is set out in two columns The first column is headed 'Description of disease the second column Nature of occupation *In order to qualify for injury benefit the patient must be suffering from a prescribed* disease and have been in insurable employment in one of the occupations set out opposite the disease Below is an extract from the list of prescribed diseases

Description of disease	Nature of occupation
19 Anthrax – – – –	Any occupation involving the handling of wool hair bristles hides or skins or other animal products or residues or contact with animals infected with *anthrax*
20 Glanders – – – –	Contact with equine animals or their carcases
23 (*a*) Ulceration of the corneal surface of the eye (*b*) Localized new growth of the *skin papillomatous or kera totic* (*c*) Epitheliomatous cancer or ulceration of the skin due in any case to tar pitch bitumen mineral oil (including paraffin) soot or any com pound *product or residue of any of these substances*	The use or handling of or exposure to tar pitch bitumen mineral oil *(including paraffin)* soot or any com pound product or residue of any of these substances
24 (*a*) Chrome ulceration – –	The use or handling of chromic acid chromate or bichromate of *ammo* nium potassium sodium or zinc or any preparation or solution contain ing any of these substances
(*b*) Inflammation or *ulceration* of the skin or of the mucous membrane of the upper respiratory or mouth pas sages produced by dust *liquid or* vapour (including the condition known as chloracne but excluding chrome ulceration)	*Exposure to dust* liquid or vapour

25 Inflammation ulceration or malignant disea e of the kin or subcutan ous tissues or of the bones leukaemia or anaemia of the aplastic type due to x rays ionizing particles radium or other radioactive substance or inflammation of the skin due to other forms of radiant energy	Exposure to x rays ionizing particles radium or other radioactive substance or other forms of radiant energy

Note that the term dermatitis is not used but inflammation of the skin The list of prescribed diseases is not final and will probably be reviewed from time to time The new conception occupational disease will take the place of industrial disease

Injury benefits

The workman will secure his injury benefit in the following manner If the doctor in the First Certificate of incapacity for example certifies dermatitis (disease number 24 (*b*)) the patient should fill in Part IV of the certificate and supply information of his work to the National Insurance Officer The latter will arrange for th patient to be examined by a special doctor (equivalent to the certifying factory surgeon) If the case is straightforward benefit will be paid If the evidence is not conclusive a medical board of two doctors will be arranged whose decision is final

When incapacity is prolonged for more than 26 weeks a different criterion for payment called disablement benefit becomes valid Disablement benefit is assessed by a special medical board in the form of a percentage of total disablement a procedure similar to that adopted by the Ministry of Pensions

Disablem nt benefit is paid as a lump sum or as a weekly pension

SOCIAL FACTORS

The aetiology of many of the common dermatoses is multiple and complex

Personal and social factors producing physical and mental strain are implicated in the diagnosis of these conditions

The assessment of these adverse social factors is usually a matter requiring great skill and judgement on the part of the family doctor But frequently certain adjustments of the patient s life must be made family relationships clarified hours and type of work changed faulty habits corrected a holiday prescribed all as part of the specific therapy of the disease Often such measures are more successful than the treatment directed towards correcting the organic component

SOME SPECIAL PROBLEMS

Infantile eczema

It is a real misfortune for the young mother to find her baby with what seems to be an intractable skin disease and to witness the apparently intense paroxysms of irritation which often makes the baby scratch until the skin bleeds As weeks and

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